THE ENGINEERING AND MINING JOURNAL.

WITH WHICH IS INCORPORATED

THE COAL AND IRON RECORD.

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THE ENGINEERING AND MINING JOURNAL

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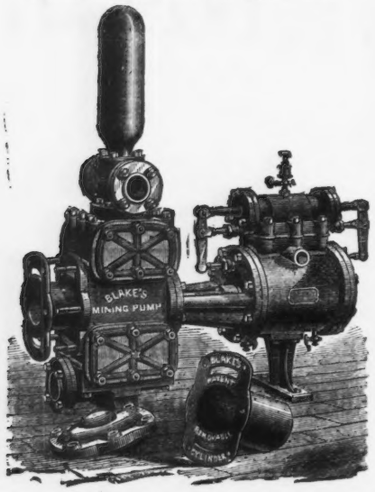

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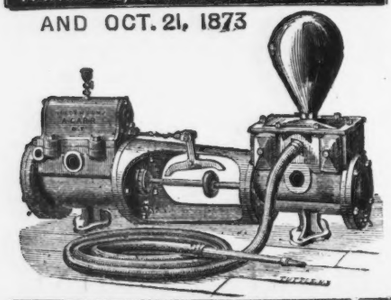

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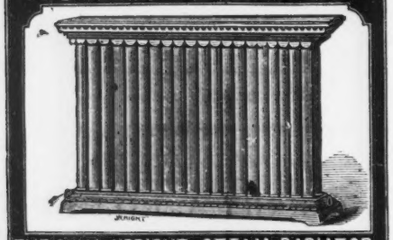

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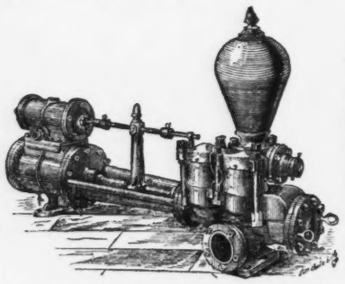

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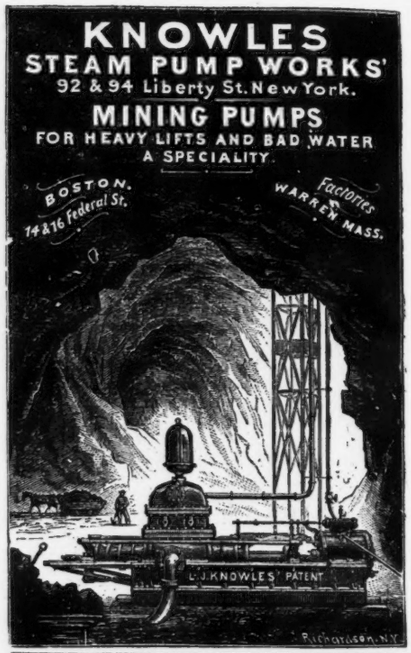

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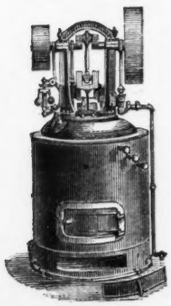

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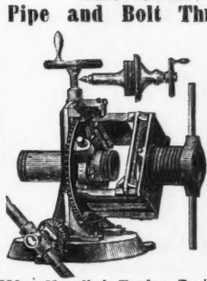

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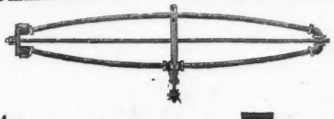

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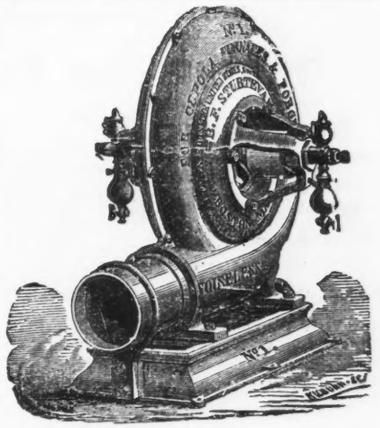

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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E. } Editors.
ROSSITER W. RAYMOND, Ph. D. }

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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The Centennial Subscription.

WE learn from Mr. ALEXANDER, that in reply to the appeal of the Centennial Committee of the American Institute of Mining Engineers, whose circular we published last week, subscriptions have already been received to the amount of nearly $1700. From many of the members—probably the larger number—answers could not be so soon received. The promptness with which the nearest have responded, sets the rest a good example. We take occasion to add that in resolving not to publish the names and amounts, the Committee was simply desirous of leaving every member or associate free to contribute as he might choose, without being exposed to comparisons or inferences. The Committee will, of course, keep proper accounts of its receipts and expenditures, which will be open to legitimate examination on the part of subscribers. *

Rapid Transit in New York.

THE Commission appointed by the Mayor to select routes and plans for a rapid transit road in the city of New York, has made a first report on the selection of the route. There are three routes indicated. On the west side, the present line of the Greenwich street elevated road is to be continued up Ninth avenue to the Harlem River. Another route is to be by Sixth avenue to Fifty-ninth street, and there to connect with the Greenwich street road. On the east side, the road will pass up Third avenue, or, as an alternative, up Second avenue, to Harlem Bridge, and will have branches to the ferries and the Central Depot.

A limit is put on the time to be taken in building these roads, so that it seems probable that before the close of 1876, the patient, long-suffering citizens of New York will have rapid transit, on the east side at least as far as Forty second street, and on the west side as far as Highbridge (Harlem River).

The plan of road has not yet been definitely decided on, but it is understood that it will be an elevated road of the Gilbert tppe, with some modifications, on the east side of the city, and the present Greenwich street road on the west side. It is a matter for congratulation that the rapid transit problem has at last assumed a practical form, and that there is every prospect of the roads being built within a year.

Professor Wurtz.

WE notice in the last number of our esteemed contemporary, the *Gas Light Journal*, that Professor HENRY WURTZ, who has for several years been its able editor, has resigned that position, and, we understand, proposes devoting his time more exclusively to his chemical investigations and the practice of his profession as chemical expert in gas and metallurgical questions, a department of technical science in which he stands at the very head of his profession.

His ingenious method of gas analysis, published in the *Gas Light Journal*, and an abstract from it in this Journal, some months ago, is one which will probably find extensive application, and do good service in the analysis of blast furnace gases.

The great ability and untiring perseverance which Prof. WURTZ displays in the pursuit of scientific investigations, have already resulted in some of the most notable discoveries of the age, such, for example, as the Dynamic Theory of Metamorphism, which was first published in this Journal, in January, 1868, Vol. V. p. 50. The work on which he is now engaged promises results of the greatest importance to the scientific world, and, especially, to the study of chemistry.

We trust that the great loss which our contemporary has sustained in the resignation of Professor WURTZ, will result in the greater benefit of the gas and metallurgical interests at large, his labors now being pursued under more favorable circumstances.

Outrages in the Schuylkill Coal Region.

ON the 1st inst., THOS. SANGER, a mine boss at S. M. HEATON & Co.'s Colliery, Mahanoy, and a miner named WM. UREN, who was with him, were murdered in broad daylight, and in the presence of several persons, who, unarmed, were unable to prevent it, or arrest the murderers.

On the 3d inst., JOHN P. JONES, inside superintendent of the Lehigh and Wilkesbarre Coal Co., at Cole Dale, Carbon Co., was murdered, also about seven o'clock in the morning, and in the presence of a number of witnesses.

In the first case the murders were committed by five men, who all escaped, and are still at large. In the second case two men did the dastardly deed; but, fortunately, they have been captured, and, we trust, will promptly pay the full penalty of their crime.

In each case the men are of the class usually known by the name of "Mollie Maguires," and though we do not believe they form any organized band, they have long been a curse and terror to the coal regions.

That a few roughs of the worst character should thus be allowed to defy the law, year after year, and make Schuylkill County a by-word and disgrace, is certainly not creditable to the administrators of the law in Pennsylvania.

It is said, and, we fear, with but too much truth, that these men are shielded and protected by many of the miners, and, consequently, the whole class is charged with complicity in acts for which they have as great a horror as have other good citizens. The fact is, that the men who are the most violent and unreasonable in the strike agitations, and who thus obtain considerable influence over their fellows through fear, if not through friendship, are the same that commit murder when their unreasoning prejudices are excited or thwarted. They are protected by the miners when they commit the outrages we have so often signalized during the excitement of a strike, because they do these lawless acts avowedly in the interest of their fellow-workmen; and the natural consequence is, that they proceed to acts which are condemned and denounced by the great majority of the miners—for, as a rule, these miners are a law-abiding and industrious class, and by no means deserve the bad name these outrages naturally give them.

If the Miners' Unions would not be satisfied by merely "protesting" on paper against the perpetrators of lawless acts during their strikes, but ferret out and bring to justice, as they undoubtedly can do, those who mob, and sometimes murder, "black legs," they will quickly clear the region of these desperate ruffians, who bring disgrace on the whole body, and turn public opinion against them, even when they have right on their side. Let the Unions trace out and banish, or better still, hand over to punishment, every one of those cowardly assassins that are so busy distributing "Coffin notices" throughout the coal regions, and in so doing they will do the greatest possible service to their cause and relieve an honorable body of men from the imputation of encouraging, by silence and inaction, at least, crimes from which, as individuals, they would shrink with horror.

We do not believe in the existence of any organized band of "Molly Maguires." These outrages are committed by the rough, ignorant and violent element, to be found in every large body of uneducated men, which has been encouraged to go from threatening "blacklegs" to murdering superintendents by the protection and implied, if not expressed, sympathy their first violations of law received from the Miners' Unions during the late strike. And till the Unions stop, as they can do, these lesser outrages, they cannot relieve themselves of the charge of complicity in the greater crimes that are the natural outgrowth of the spirit they encourage, or at least connive at.

Illegality of Secret Commissions.

THERE is, probably, no more demoralizing or widespread system of dishonesty than that which prevails so generally throughout this country, of contractors, manufacturers and dealers generally, paying secret commissions to the agents of the purchasers of their wares. It has long been more than suspected that the purchasing agents of the Government, whether National, State or City, and of mining and railroad companies as well, receive, privately, a commission on all the purchases they make. In fact, the practice has become so general that there is little concealment deemed necessary in many cases, and in some, the commission is even looked upon as an allowed perquisite of the office. The directors of mining, metallurgical, railroad and other companies apparently make no effort to put a stop to this state of things; on the contrary, they often protect and continue in office the managers and agents who are more than suspected of receiving these bribes. Can it be that they are ignorant of what is known even to the outside world; or can it be that they share in the dishonest gain?

It would be easy to specify the manner in which these frauds on their employers are carried on; for example, a superintendent or agent of a mine is "seen" by the agents of the machine shops, the pump makers, the manufacturers of ropes, the hardware merchants, in fact, by the agents of all who have goods to sell, and he is told that he will receive a commission, which varies usually from 5 to 20 per cent., on all he may purchase from them. Thus, it may not be a matter of special negotiation in any particular case, but it has become so general a rule that there are few manufacturers who do or can refuse to allow the agent these secret commissions, whether it be mentioned at the time the order is given or not. And this accounts, in many cases, for the assertion of the manufacturer that "he would not sell to the company for any less than the invoice price, even if he did not pay the agent a commission, and that, consequently, the company is no loser thereby," the fact being that if, in one particular case, he has not to pay a commission, in nine other cases he has, and his price list must be made to cover it.

The whole system is exceedingly pernicious on the part of manufacturers and dealers, and on the part of agents it should be considered simply as *swindling*.

Is it necessary to argue so plain a case as that the company, in consideration

of the salary it pays its agent, contracts for the best services he is able to give it? It is clearly his duty to give his employer the benefit of his experience or influence as well in purchasing machinery as in the employment of labor, and the agent has no more right to accept a commission or gratuity on the one than on the other, or than has the colonel of a regiment to a commission on the pay of his soldiers.

Fortunately, we have not yet come to that point where the practice is openly defended, but it is far too common. The remedy is in the hands of the directors of the companies, who can easily ascertain whether their agents accept these bribes or not, and a few examples of exposure and ignominious discharge would have an exceedingly wholesome effect.

It will be of interest, and in some cases, perhaps, assist in putting a stop to the practice, to know that, in England at least, a legal decision has been given in which it is affirmed that *such secret payments of commissions by one contractor to the agent of another are illegal and invalidate the contract.*

"The case was that of a MRS. SORBY, a colliery owner, whose colliery was managed by her agent, Mr. CRESWICK. With the knowledge and consent of his employer, this agent made an agreement in 1869 with one SMITH for the hire of fifty railway wagons for the term of five years, the hire to be paid for at a stipulated rate either in coals, calculated at 6s. per ton, or in money, at MRS. SORBY'S option. On the day this agreement was made, SMITH promised the agent, CRESWICK, to pay him £1 each for every wagon hired, and a bonus of £10, in all £60, alleging that it was a first transaction, and that the commission was given 'in the hopes of further business.' Shortly after the first transaction, SMITH proposed to CRESWICK a second contract according to which MRS. SORBY was to get the wagons elsewhere for money and her agent CRESWICK was to supply SMITH with 12,000 tons of coal from her colliery at 6s. 6d. per ton. The contract was duly signed by MRS. SORBY. The following year, 1870, while the greater part of the coal had yet to be delivered, MRS. SORBY disposed of her colliery without any reservation in favor of SMITH. In 1873, the price of coal rose to £1 per ton, and SMITH became urgent for the delivery of the balance of the coal at 6s. 6d. per ton, and finally brought suit for breach of contract, placing his damages at £2,190. MRS. SORBY rejoined denying the validity of the contract, and citing the plaintiff's payment of £60 to her agent as a fact which vitiated the agency. On the first trial of the case, the jury, acting under the judge's direction that 'they could not find for the defendant unless they were satisfied that the plaintiff and agent were in corrupt collusion,' decided that, although the practice of giving commissions to agents was objectionable, it did not, in this case, amount to fraud, so as to vitiate the contract. On appeal to the Court of Queen's Bench, however, Chief Justice COCKBURN ruled that 'if the gratuity of £60 from the plaintiff to the defendant's agent had any influence upon the mind of the agent, the contract was vitiated,' and on that ground a new trial was granted.

"In the course of his examination at the new trial, the plaintiff stated that it was the usual practice for an agent who introduces business to receive secret commission from a party to an agreement of this character, and that the universal custom with wagon companies was an allowance of £1 per wagon. This statement elicited an indignant protest from one of the jurymen. In summing up, the Judge left for the consideration of the jury three questions, viz. : 1. Had CRESWICK authority from the defendant to enter into the contract in question? 2. Was the promise to pay CRESWICK a commission made with the intention of creating an interest in favor of the plaintiff in reference to the negotiations which resulted in the contract sued upon? 3. Did the plaintiff promise to pay CRESWICK a commission, in fact induce him to consent to terms which were less favorable to the defendant than they otherwise would have been or to terms which could be reasonably foreseen to be less favorable than they otherwise would have been? The jury decided all three points in favor of the defendant; thus reversing the decision of the jury on the first trial, and establishing a principle that secret payments by one contractor to the agent of another are illegal, and invalidate the contract."

The application of this principle would have far-reaching consequences and might enable the long suffering stockholders of some of our companies to create not a little excitement by showing that, since the agent on whose representations the companies' property was purchased had received a secret commission, the contract was invalid and payment on it might be refused. The view opens as we think of the effect of the enforcement of a law like this on the profits of mine and railroad agents and on the very existence of some companies.

"What is Steel?"

Written for the ENGINEERING AND MINING JOURNAL, by H. M. HOWE, M. E.

CONTINUED FROM PAGE 236.

IF we base the definition of steel on the possession of a certain modulus of resilience, we shall always be able to draw sharp and distinct lines between it and cast and wrought iron. The lines thus drawn will be no more arbitrary than is necessarily the case if any or all the properties conferred by carbon form the basis of the definition. The modulus of resilience can always be determined with accuracy, and almost with ease. It is only necessary to know the elastic limit and the modulus of elasticity, both of which can be accurately determined. Should a classification on this basis be adopted, it would be important that some definition of the elastic limit should be more universally accepted than is now the case.

Of course, it would only be necessary in peculiar and very rare cases to determine, the modulus of resilience, in order to decide whether any class or piece of iron were steel or not. Whatever basis is assumed, there will still be similar peculiar and rare cases when some exact, and, perhaps, expensive determinations will be necessary. By adding to the definition on our proposed basis a brief enumeration of the properties ordinarily found in steel, we would make it easy for any tyro to decide in all ordinary cases between steel and wrought and cast iron.

I freely admit that it is very possible that the combination of malleableness in the annealed state with hardness or, better, resilience in the tempered state may prove on the whole a better basis of definition than the one proposed. Indeed, one of the advantages of the latter—that one and the same modulus of resilience could mark the boundaries between steel and both cast and wrought iron—is hypothetical. But it seems highly probable that there are two degrees of carburization, one in the neighborhood of 0.30 per cent., and the other in the neighborhood of 2.00 per cent., (which seem the fittest points for these boundaries) which correspond with the same modulus of resilience.

None of the other properties mainly affected by carbon, silicon, etc., and which are in general characteristic of steel, seems to me of sufficient importance to form the basis of the distinction between steel and the other classes of iron, though some of them accompany resilience, and the power of tempering, pretty uniformly in all the different varieties of steel now known.

Foremost among these is the power of being forged, a direct consequence of the metal not passing directly from the solid to the liquid state, but through an intermediate pasty state, like that of glass, in which it has vastly greater ductility and malleableness than in the solid state. The higher the proportion of carbon, etc., the lower is the temperature and the narrower is the range of temperature of this pasty state.

Most kinds of iron in which the proportion of carbon, etc., is below that at which the resilience and tensile strength begin to decrease rapidly with increasing proportions of carbon, that is, below the limit of cast-iron, are forgeable at some high temperature. Hence, many definitions of steel distinguish it from cast-iron by saying, "All highly carburized iron which can be forged, is steel; all that cannot is cast-iron."

The radical objection to this basis of definition is that forgeableness is not the most essential property of steel, but merely one which happens to be present in those varieties we are most familiar with. Such an objection, which is always liable to be practically felt in similar cases, has practically arisen in this. Sulphur, copper, oxygen, probably silicon, and, possibly, many other elements, when present in quite small quantities in steel or wrought iron, render them unforgeable, or "red-short." In general, the more carbon, etc., iron contains, the more readily are its properties thus affected; and iron which has been freed from slag by melting, seems more easily affected than welded iron comparatively rich in slag. [This apparently applies with still greater force to the effect of phosphorus and other elements which produce cold-shortness and reduce resilience.]

This redshort metal may be, and indeed is, cast under pressure into a great variety of useful forms, in which it exhibits properties closely like those of any iron of a corresponding degree of carburization. It is ridiculous to call such products cast-iron, for they have in common with it only the negative property of "redshortness," while they have nearly the same tensile and compressive strength, resilience, power of tempering and welding, and fusibility as the corresponding grades of steel.

In the same way it was formerly said that steel was an alloy or compound of iron which could be forged, tempered, and welded. But of late years many kinds of iron have arisen, which really possess all the important properties of steel, and which it would be absurd to call anything but steel, but which cannot be welded.

From what little we know about the fusibility of iron, it seems to be nearly constant for steels of different composition, possessing the essential properties of steel to the same degree. Should further research confirm this, its intermediate fusibility might be a valuable means of distinguishing steel from wrought and cast iron. But our present knowledge on this head is too meagre to make it a safe guide.

With all due modesty, then, and only in the hope that discussion may lead to the general adoption of some really good definition, the following is offered for improvement. "Steel :—A compound or alloy of iron whose modulus of resilience can be rendered, by proper mechanical treatment, as great as that of a compound of 99.7 per cent. iron with 0.3 per cent. carbon can be by tempering.* Those varieties of steel now known have their hardness, tensile strength, and resilience increased at least 20 per cent. and generally much more, by being plunged, when at a temperature of 800° C, into oil at a temperature of 15° C. They are less fusible than a compound of iron with 2.00 per cent. carbon, and more fusible than one of iron with 0.29 per cent. carbon. They have greater tensile strength than compounds of iron with more than 2 or less than 0.30 per cent. carbon, and greater hardness than compounds of iron and less than 0.30 per cent. carbon. They can generally be forged, and can often be welded."

While formerly steel was probably universally understood to mean iron possessing some of the qualities carbon gives, this meaning is now disputed, as has been already hinted, and it has become common of late years to call all products of the Bessemer and openhearth processes steel, without regard to their useful mechanical properties. A purchaser of fire, box steel, or boiler plate steel, or of steel rails, will often have metal offered to him claiming to belong to these classes, which has no one of the distinctive properties formerly associated with steel. So very common has this acceptation become that we actually hear cultivated and intelligent engineers insisting that all malleable alloys of iron which have been rendered homogeneous by casting are steel, and that all other malleable alloys of iron are wrought iron. Thus, while the distinction between cast iron on the one hand and wrought iron and steel on the other is unchanged, it is now claimed that the distinction between wrought iron and steel should be based on homogeneousness and freedom from slag, and that hardness, tensile strength, resilience, and the power of hardening have nothing to do with it.

It is easy to see how this confusion arose. Before the manufacture of Bessemer steel only highly carburized iron was produced by fusion; it was impossible to melt iron nearly free from carbon on a commercial scale. When BESSEMER and MARTIN did melt uncarburized iron, the question arose what to call it. The cast ingots could not be said to have been wrought; hence it seemed strange to call them *wrought* iron. They were made in the same manner, in the same apparatus, from the same materials, and by the same workmen, as carburized iron, which unquestionably was steel, was made. They looked like steel, they felt like steel, from which they could not be distinguished without troublesome tests, chemical or mechanical. The easiest way was to call the whole product steel, and not bother about mechanical tests, or split hairs about physical properties. They, perhaps, did not reflect that the same reasoning would justify a jeweler in selling brass as gold, or strass as gems. It is possible that some manufacturers, being human, were influenced by the consideration that steel was vaguely associated in the minds of the public with superiority and was in general higher priced than wrought iron, to sell that part of their product as steel which a strict adherence to the then recognized distinction between steel and wrought iron would have compelled them to call wrought iron.

Again, the principal use to which Bessemer iron and steel has been put is the manufacture of rails. These are superior to puddled rails, not so much on account of their greater hardness, or to any other of the effects of carbon, but on

* It is, of course, intended that the modulus of resilience of this compound (Fe. 99.7 & C. 0.3) should be accurately determined, and that this modulus, in inch pounds per cubic inch, should be substituted for the expression "that of a compound of 99.7 per cent. iron with 0.3 per cent. carbon can be by tempering."

account of their absolute freedom from welds. Indeed, the heads of many puddled rails are harder than Bessemer rails, which will outlast them ten times over. Puddled rails almost never *wear* out. In almost all cases they fail from the destruction of the welds between the upper layers of the head before their size is sensibly diminished by abrasion, unless, indeed, the breaking off of the side of the head, from brittleness, renders them useless before the failure of the welds.

A Bessemer rail, however, having no welds to yield to the incessant pounding, usually lasts till it is actually worn out by abrasion. Hence, railway managers do not care very much about the degree of carburization of rails said to be steel, provided they are absolutely weldless, and a steel rail has come to mean with them a weldless rail instead of a hard rail. They are, in general, willing to receive all the products of the Bessemer converter as steel, provided they are not too brittle. Were their pleasure alone to be consulted, freedom from welds might be the most convenient ground for the classification of iron.

Thus, a radical change in the meaning of a very important word is proposed, a word very frequently used, and by all classes. It is not as if it were a change in the meaning of a purely technical word, used only by a limited class, affecting their interests alone, and to be adopted or rejected solely as might best suit their convenience; it is a complete change in the meaning of a word that is in every man's mouth, a change in which the interests of the whole civilized world are affected, and in contemplating which the convenience of all mankind is to be considered.

No one will deny that it is of the highest importance to preserve the meaning of such words with as little change as convenience will allow. No such change as this should be accepted unless the convenience of a very large class is to be greatly promoted, and unless the advantages to be gained greatly outweigh the disadvantages it must entail. These changes are, in themselves, most undesirable, the more so the more commonly, and by the larger class, the word is used. Language should be stable and conservative. Still, this change is advised by men whose opinions carry so much weight and deserve so much respect, that it is well worth while to consider the reasons for and against it.

1. It may be said that steel has always denoted a superior kind of iron which was malleable, that iron freed from scoria and made perfectly homogeneous by melting is superior to iron which has not been melted, *cæteris paribus;* that, therefore, all malleable iron which has been melted should be called steel.

A. But while steel has happened to denote a class of iron which is, as a whole, superior to other classes, its superiority is not one of its essential attributes. We say that the Caucasians are a superior race of men; yet, should we find a colony of highly intelligent and cultivated Mongols, who were really superior beings, we would not insist on their being called Caucasians on account of their superiority.

B. Certain kinds of steel were known to be very inferior to certain kinds of wrought iron; thus, rough puddled steel or blistered steel, when cold-short from phosphorus, must have been considered on the whole inferior to the best Swedish iron, but was nevertheless always considered steel. Thus absolute superiority was not considered essential to steel.

C. While homogeneousness and freedom from slag are important elements of superiority, they do not, themselves, necessarily give absolute superiority. Who could call cold-short Bessemer ingots, on the whole, superior to the best Swedish iron?

D. The points in which steel was necessarily superior to other kinds of iron were not homogeneousness and freedom from slag, but resilience, hardness, tensile strength, and the power of hardening. In fine, custom and precedent do not sanction the use of superiority, due to fusion alone, as a basis of distinction between wrought iron and steel, either directly or by analogy.

Again, the new distinction would exclude from the class "steel," several large and important classes of iron, which have heretofore always been called steel. Among these I may mention blistered, shear, puddled and German steel. Are we no longer to say blistered steel, but blistered iron? Shall we no longer discriminate between puddled iron and puddled steel except by circumlocution? Conversely, a large class of iron, of great and constantly increasing importance, almost entirely free from carbon and from the effects it produces, is being made by the open-hearth and Bessemer process. Under the proposed definition this would be called steel, although its properties are very unlike, and almost opposite to, those of what has been formerly considered steel.

This idea, that the combination of malleableness with homogeneousness alone constitutes steel, leads to some curiously confusing results if pushed to its strictly legitimate conclusions. For instance, a cast ingot of iron, as free as practicable from carbon, is to be called steel, although soft, not resilient, weak, and incapable of being hardened. If a bar from this is cemented in charcoal, and then made into a most excellent spring or cutting tool, it can no longer be called steel, but wrought iron, because it is no longer strictly homogeneous, since, of course, some parts of the bar will be more highly carburized than others, as cementation is never strictly uniform. Now, since this spring cannot be distinguished from strictly homogeneous springs, with which it possesses identically the same properties, and which are to be called steel, it follows that the term steel is to refer merely to the history of iron, and not to its useful mechanical properties.

It is no easy thing to imagine or describe the confusion and mistakes which must arise from such a very radical change, from the time of its adoption to that of its being generally understood and adopted. The natural conservatism of language would prolong this painful period of change to a most unpleasant length. Moreover, the confusion would not end till the change had been well established in the other languages of the civilized world. In meeting the word steel in specifications, contracts, and indeed all literature, whether technical or not, whether English or foreign, it would be necessary to determine whether it had been written before or after the change had been effected.

TO BE CONTINUED.

Dephosphorisation of Iron Ores.

THE following process for effecting the dephosphorisation of iron ores has en patented by its inventor, M. G. VELGE, of Liége: When a substance conining phosphate of iron is fused with two or three times its weight of a mixre of carbonate of soda and potash, the phosphorus can be removed in the m of alkaline phosphate by washing. Although this process is applicable to treatment of small quantities only, its principle is that upon which M. VELGE bases his own. He found (1) that chloride of sodium can be substituted for these carbonates; (2) that it is sufficient to add to the ore a weight of this reagent only a trifle in excess of the phosphate contained in the substance—say 6 parts of salt to 5 of *phosphate*, or 1 lb. of salt to about 1-5th lb. of *phosphorus*; (3) when the mixture has been well made the ore should not be fused, but kept for some time at a mere red heat. When the gases have all been given off, water slightly acidulated with hydrochloric acid is added, and the phosphate dissolves after a little time. At first he used to crush the ore and the salt together, but, beside the expense of the operation compared with the low cost of the matter operated on, the final result was unsatisfactory. The ore came out in powder, with which there was every chance of choking the blast. He then proceeded to dry strongly, or slightly calcine, porous ores, adding to them a concentrated solution of sea-salt. This solution was taken up very greedily by the roasted ores, some varieties absorbing as much as 40 per cent. of their weight. In this way all the molecules of phosphorus are brought into the presence of the salt. After calcination and successive washings the quantity of phosphorus held by the ore was reduced from 1·25 per cent. to less than one two-thousandth. Practically, perhaps, so high a degree of perfection would hardly be arrived at, but it is contended by the inventor that the process itself is quite satisfactory. Four operations are involved in the dephosphorisation:

(1.) The desiccation of the ore by waste heat or other suitable method. If there be much phosphorus to remove, it will be best only to use such ores as lose much water on drying. On the other hand, if the ores contain but little phosphorus, it will be useless to dry them.

(2.) The absorption of a solution of salt, stronger or weaker, according to the proportion of phosphorus.

(3.) *Calcining.*—In the ordinary way the gases of the blast-furnace are available for calcining, and when this is the case, the calcining can be effected in a vertical oven, the gases being kindled from below. In the absence of such gases, a reverberatory furnace must be employed, for the calcining in a vertical furnace by admixture of coal has the effect of partly reducing and melting the ore, and thus rendering the washing almost impossible. Not only are the pores of the ore choked in part, but, in the case of silicious ores, the phosphate of soda is converted into silicate of soda. In making use of the blast-furnace gases all the carbonic oxide is consumed before reaching the ore, and there is no sign of reduction, even at the brightest red-heat.

(4.) *Washing.*—The ore should be left for several days in vessels filled with water, taking care to renew the water frequently, and to add at each renewal a small quantity of hydrochloric acid. The water by itself would have but a small effect upon the phosphate. It is of the greatest importance to conduct the washing with care, for the success of the operation depends upon it.—*Iron.*

The Black Hills.

PROF. JANNEY'S LATEST REPORT.

CAMP ON SPRING CREEK, BLACK HILLS OF DAKOTA,
July 31, 1875.

THE HON. E. P. SMITH,

SIR—In my telegraphic dispatch dated July 17, I briefly informed you of my explorations in that portion of the Black Hills, to the north and north-east of Harney's Peak. In order to more rapidly explore the hills, I have divided my party, Mr. NEWTON, the geologist, going south from French Creek with the astronomer and photographer, to map and explore the southern portion of the country as far as the Cheyenne River. I, with the assistance of my miners, have prospected the hills to the north, a region hitherto unexplored and unknown. I found gold in placer deposits on both Spring and Rapid Creeks, from their head waters to the point where they emerge from the hills, and a more extended prospecting and exploration shows that in localities in the valleys of these streams the gravel bars, especially those of older formation and elevated above the present level of the streams, contain gold in quantities sufficient to yield a fair remuneration for labor economically and skillfully applied, assisted by proper tools and mechanical appliances, at least a moderate amount of capital or its equivalent, and such a system of working as the experience of twenty-five years has taught the miners of the Pacific slope to employ. Fortunately, there is an abundance of water in both of these streams, with a good fall, and in most instances a rapid current. Spring Creek will yield from 300 to 1,000 miners' inches of water, according to the season, and Rapid Creek at least twice that amount; and while the valuable placer deposits, as far as discovered, are by no means rich or very extensive, compared with those of California, still there is enough of the precious metal to develop the country, and stock-raising and agriculture will do the rest.

Out among the foot hills, along the eastern slope of the Black Hills, are large gravel deposits, in some places 30 feet in thickness, often cemented by lime into a hard conglomerate, and capping the high hills of Jurassic sandstone and red beds. The decomposition of this conglomerate has in places yielded the gold which it contained, and which has been washed by heavy occasional rains down the dry gulches, and caught and concentrated in the dry gulches in the sandstone of the red beds. The secondary deposits afford the only "crevicing" yet found in the hills, and may be worked during the spring months, when there is water flowing out of the hills in nearly every stream on to the plains; but in summer scarcely a single stream carries its water in an unbroken current to the Cheyenne. They all, except, perhaps, Rapid Creek, sink in their beds on reaching the foot hills. Should these conglomerates be found to contain gold in paying quantities, it will require the employment of capital to work them successfully. Several enormous ledges of a mixture of ferruginous quartz and quartzite cross the valleys of Spring and Rapid Creeks, extending for miles in a north-westerly direction. The oxides of iron contained in the ledge have resulted from the decomposition of iron pyrites, and specimens of the quartz show occasionally visible particles of gold, and give on crushing and panning a trace of "color" of the much sought for metal.

It is remarkable that so few valuable minerals have been found in the Hills, although the country is overrun by miners, and everything in the shape of a rock, in any way peculiar in its appearance, is brought to me for identification; but I have not yet seen any mineral containing lead, copper, or silver—only iron pyrites, iron ores resulting from its decomposition, mispickle, graphite, black tourmaline, rose quartz, garnets and staurotite, as mineralogical curiosities. In testing the deposits on Spring Creek I worked out a particularly rich spot, where an old channel has been cut across by the present bed of the creek, and in ten hours' work with a small sluice obtained five-sixths of an ounce of gold, or about $15 50. The soldiers had previously panned out of the same place not less than two ounces of coarse gold, and on measuring the amount of gravel washed I found that the total yield was at the rate of $4 per cubic yard, or about three cents to the pan as an average for the whole thickness of the deposit.

It is truly said of this region that there was gold in the very roots of the grass; but it is not the gold of the gravel bars or quartz ledges; not the gold of the miner or the geologist, but the future solid worth of the Black Hills is to be sought in the luxuriant growth of fine grasses that everywhere spread over the beautiful country. Of the climate of the Black Hills, the severity of the winters, the danger of the crops being injured by frosts, and the agricultural products best suited to the soil, I can only judge by examining the flora of the region

along the eastern slope where the elevation is from 3,500 to 4,500 feet above the sea. The valleys are filled with a fair growth of burr oak, elm, hornbeam, box elder, white birch, aspen and hazel. The conspicuous plants are the tiger lily, the poison ivy, and Virginia creeper, grape vines, wild flax, hops, and oats, while raspberries, black and red currants, gooseberries, plums, strawberries and other berries are in places quite abundant, from which I assume that the climate is not more severe than that of Maine and New Hampshire, where many of the same plants grow and ripen their fruits, and that while the season is not long or hot enough for corn, yet wheat, oats, barley, flax, hops, and potatoes would grow here luxuriantly. The rain fall is quite remarkable. Scarcely a day passes without a shower of rain, though perhaps lasting only a few minutes. Heavy rains of long duration only occasionally occur, but thunder storms are very prevalent and numerous. Trees may be seen all over the Hills showing the marks of lightning. The elevation above the sea makes the climate cool and healthy, while the heavy dews and frequent showers of rain keep the country carpeted with a luxuriant growth of grass always green.

WALTER P. JANNEY, E. M. Geological Exploration Black Hills.

Spontaneous Combustion of Coal—Burning of the Schooner Aurelie.

CAPTAIN OCTAVE COTE'S STORY.

"I WAS captain of the ill-fated schooner, the Aurelie, of 548 tons. On Friday, April 16, the Aurelie left Liverpool freighted heavily with coal, and proceeded directly to Barbados. When I reached that port, I found orders awaiting me to proceed to the River La Plata with my cargo. I left Barbados on the 20th of June. For seven days after our departure we had a good breeze, and the schooner forged her way under the best possible conditions. After this it was exceedingly dry and hot. I may be able to give you some idea of the intense heat when I say that for eighteen days in July we made only two knots an hour. On Saturday, Aug. 20, a fire was discovered. *It was unhesitatingly produced by spontaneous combustion.* I first became aware of it between the hours of 6 and 8 P.M. I gave orders at once that we should still hold our port tack for the La Plata. A stiff breeze encouraged me to believe that we could reach port without sacrificing a single life on board. The fire generated but little smoke; but the gas escaping from the hold was terrible to endure. Soon after the discovery of the fire I ordered an iron rod to be sent down through the coals, and after it had been there a few moments it was blazing red hot. This at once led me to believe that the fire had been burning for a long time before it was discovered, and a second probing of the rod aft gave me to understand that from prow to stern the entire bottom of the vessel was a mass of living coals.

"For a whole week the fire gradually gained headway, while, to prevent the intensity of the heat, I ordered the pumps to keep from working, hoping that the leaking of the vessel might do something toward extinguishing the flames. All this availed nothing. The fire still kept gaining headway. The gas finally drove all on board from their quarters, and at last, when the life of everyone on board was imperilled and when I discovered that the ship was gradually sinking, I ordered the boats to be lowered over her sides. The crew behaved splendidly, and during these most critical hours preserved the best courage and presence of mind. When the decks were almost on a level with the surface of the water I ordered all to leave the ship and repair to the open boats then tossing hither and thither on the tide. This was on August 7, at 5 P.M.

"After an exposure of four days and five nights, the crew, 14 in number, were rescued by the ship *Moonlight*, and carried to Boston, Mass."

Notes.

Tests of Steel.—A Committee of the Board appointed by the President of the United States in conformity with an act of Congress, approved March 3d, 1875, has been instructed to make a series of tests to determine the constitution, characteristics and special adaptations of steel used for tools.

As the results sought to be obtained are of public interest, the committee would request manufacturers of tool steels to aid in this work, by furnishing samples of their steel, to be subjected to mechanical, physical and chemical tests.

For particulars apply to DAVID SMITH, *Chairman. Washington, D. C.*

Preparing Paper. Paper Felt, and Paper Stuff to manufacture a new material to be used as a substitute for Wood, Leather and other materials in Construction, and applicable to various purposes.—The inventor says, I form fibrous materials into paper in the usual way, but I pulp and bleach as little as possible, so as not to destroy the fibre. As the paper so manufactured comes from the rolls I take with it a material either of vegetable silk, or wool, which has passed through a carding machine, but has not been subjected to pulping, and pass the two materials together through rolls, and by pressure blend them into one sheet. I then, by hydraulic or accumulative pressure, incorporate a number of layers of the material one on the other to form the required thicknesses from which to manufacture the different articles for which the invention is applicable.—*Patent of M. Gaudy, Liverpool.*

Cheap Iron on the Chesapeake & Ohio Railroad.—There are large shipments of pig iron made daily, from furnaces along the C. & O. R. R. to points along the Ohio River above and below Huntington. This fact should set the Ironton furnace men to thinking. They, too, are making iron, but what will become of their trade if it can be made 200 miles from the Ohio river, pay the R. R. freight, and the water transportation, and be sold at figures that would be ruinous to the river furnaces? Competition is the life of trade. The Longdale furnace, 17 miles beyond Covington, is making coke on New river, shipping its iron to and down the Ohio River, past the Ironton furnaces, and yet underselling them. The Quinnimont Furnace is making its own coke near the works and is also shipping large quantities of iron to and up and down the Ohio river, sending it as far as Pittsburgh. This fact alone is sufficient to establish the importance of the region bordering the C. & O. R. R. as an iron manufacturing country, and to give an idea of what the magnitude of the mining and manufacturing interests of the road will be when these interests are fully developed.—Huntington (W. Va.) *Advertiser.*

Machinery for Breaking and Crushing Stones, Ores, and other Substances.—In this invention a horizontal rocking lever is combined with two toggles, two movable and two fixed jaws. The lever is mounted on a cross shaft between the side frames of the machine, the cross shaft passing the centre of one end of the lever. To the other end of the lever one end of a short connecting rod is attached, the centre upon which it works being placed in an eccentric hole in the rocking lever, the other end of the connecting rod being connected by an eccentric to the main shaft. At the top and bottom of the face of the rocking lever an aperture is bored out for the reception of the toggle seat. The two sets of jaws are placed one above the other, in front of the lever, each of the movable jaws being provided at their rear with a toggle seat corresponding to those formed in the lever, and connected to the latter by means of a toggle, the toggle connecting the upper movable jaw with the upper portion of the lever being of greater length than that connected with the lower pair of jaws. When motion is given to the main shaft of the machine, the horizontal lever is caused to rock, thus alternately actuating the upper and lower movable jaws, the material under treatment passing from the upper pair of jaws to the lower.—*G. Bradley, and T. Madderson, Great Ayton, Yorkshire.*

The Ore Knob Copper Mines and Reduction Works, Ashe County, N. C.*

By EBEN E. OLCOTT, E. M.

WITH SUPPLEMENT.

PART I.—THE MINE.

FOR some years attention has been drawn to the copper deposits of the Appalachian range of mountains, and especially to those in that portion crossing the corners of Virginia, North Carolina and Tennessee. Certain it is that in many places in this locality available deposits of copper await the miner, and one after another, are being opened and worked. The parts of these three States alluded to are but sparsely settled and communications are insufficient to meet the demand for transportation. Railroads are wanted, as the existing wagon roads are unfitted for heavy hauling; these circumstances increase very much the difficulties in the way of mining enterprises. Notwithstanding this, the success of some of the mines of this section is an established fact, and Ducktown has for some years held a high rank among the copper producing localities of the United States.

Of all these deposits, however, none is more interesting or more deserving of attention than the one now under consideration. The works of the Ore Knob Copper Company have been energetically pushed forward, since the reopening of the mine, in the Spring of 1873, by Mr. J. E. CLAYTON, the Superintendent and one of the chief owners of the property, and if one thing more than another can insure success it is the combination in this gentleman of rare business capabilities with the deepest personal interest in the prosperity of the undertaking.

The copper vein at Ore Knob† is a clearly defined fissure traversing the gneissic rocks of Pre-Silurian age in a direction 61° East of North. Its intersection with the country rock is marked by a quartz selvage, most distinct on the northwest wall. The vein is nearly perpendicular, having an average dip of 88° to the Northwest. A line of ferruginous gossan, or impure limonite, marks its outcrop, varying in width from eight to thirteen feet, and in depth from forty to sixty-eight feet; at the summit of the hill traversed by the vein the depth is greater and it diminishes on either side. The character of the limonite affords quite certain information to the experienced eye of the quality of the underlying copper ore. As its porosity is indicative of the leaching away of much copper, it is likely to happen that beneath porous and open gossan will be found good ore, while, on the other hand, compactness of the limonite is an undesirable sign. This gossan might be used as an iron ore, as has been the case with similar outcrops in Floyd County, Virginia, and also in other localities in the Blue Ridge.

Next below the gossan is found the so-called black ore, which is an excellent copper mineral, yielding from eighteen to sixty per cent. of the metal. The black color of this ore is caused by the existence of copper glance, which is the result of the decomposition of copper pyrites. It is quite evident that the copper once contained in the gossan above has been leached out and redeposited, causing a recomposition of the ores now appearing of a black color. The depth of this black ore is about thirty feet, with an average width of twelve feet.

When this is passed through, the true or unaltered mineral of the vein is met. This is a chalco-pyrite, nearly of the formula $Cu^2S\ Fe^2S^3$, consequently containing about 34.6 per cent. of copper. Associated therewith is magnetite, pyrrhotite, pyrite, quartz, garnet, epidote, hornblende, black mica, calcite, prochlorite, and here and there a crystal of sphalerite, besides the copper minerals. The ore in depth will average seven per cent., and can be easily brought up to twelve per cent. of copper by a little picking. The vein, so far as explored, presents very few of the irregularities and impoverishments commonly seen, at all points affording paying material. This important character is particularly observed in the undecomposed portions; the altered ores are a little distorted. Northeast of No. 4 North shaft, is a large body of ore denominated low grade in the accompanying section; here pyrrholite and pyrite are found in greater abundance, and the chalcopyrite, though regularly disseminated, is in smaller quantity. An immense amount of three or four per cent. ore can be taken out from this spot, which can, (and it may be said will) be successfully worked in due course of time.

Besides these two classes of ore, the decomposed and undecomposed, predominating in amount, other interesting associations occur which are shown by a transverse sections of the vein at some points. A little below the gossan, on the southeast wall, is found a seam of native copper disseminated through a loose quartzose gangue. On the northwest wall, with the quartz selvage already mentioned, occur silicate and carbonate of copper, the cavities of which are filled with red oxide of copper, while the junction between these and the sulphuretted ore is marked by impure copper glance and black oxide. These two impregnations are not constantly met with and doubtless result from secondary actions. The native copper is found on the hanging wall and has probably been carried thither in solution and there precipitated, perhaps through the agency of some organic matter or by reducing gases. The maximum thickness of this seam is four inches and it runs out to a feather edge. It yields from thirty to fifty per cent. of copper. The deposit on the opposite wall is less regular, but has about the same thickness as the selvage containing native copper, and yields about forty per cent. of the metal. In small specimens red and black oxide, chrysocolla, malachite, and copper glance are seen together.

Eleven shafts have been sunk on the vein extending over a distance of 2792 feet (over half a mile), seven of which have reached good ore, but four of them to such a depth only that the gossan has given proof of the existence of the ore beneath. The whole number of feet sunk in these various shafts is 854, and the total length of levels is 1276 feet. In the opening of the mine alone about 5000 tons of ore have been removed, 3500 tons of which have been subjected to treatment.

The shaft occupying the most important position, both in reference to the mine and to the reduction works, is the one denominated on the plan the "Engine Shaft." Through this it is designed to do most of the hoisting by steam power, though as yet a horse-whim suffices to raise the ore at this point. It is located in the center of the mining property, at the summit of the hill, directly above the crushing-mill, and in such a position as to leave available space for concentration works, if any change in the character of the ore should necessitate their introduction. This shaft, which is now sinking, has reached a depth of 147 feet; the ore removed in this operation has more than paid the expense of sinking, and every foot sunk continues to give encouragement. Stopes are being commenced on the ground lying between No. 1 North and the Engine

* A paper read before the American Institute of Mining Engineers, at the meeting at New Haven, Conn., Feb. 24th, 1875.

† The reader is referred to a paper by Dr. T. STERRY HUNT, in the second volume of the Transactions of the Institute of Mining Engineers, lately published, on the "Ore Knob Mine, and some related deposits."—Pages 123 to 129.

shaft, which will suffice to meet the demands for 1875. This bids fair to prove a most valuable block of ground. It is 236 feet long by 60 feet deep, having an average width of 12 feet, therefore containing 786 cubic fathoms, which it is estimated will each turn out 25 tons of ore, equal to 19,650 tons of copper ore.

This short description and the accompanying section of the lode, will, it is hoped, give to members of the Institute some notion of the promising character of this great mine. We will now turn to the consideration of the hydro-metallurgical method here adopted for the treatment of the ores, known as the Hunt and Douglas patent process.

PART II.—THE REDUCTION WORKS.

The HUNT & DOUGLAS Process for obtaining metallic copper from its ores depends upon the power of a solution of protochloride of iron to dissolve oxide of copper, with the separation of peroxide of iron and the formation of protochloride and dichloride of copper, which latter is kept in solution by means of hot strong brine. The copper is then thrown down from its solutions by metallic iron, and the protochloride of iron being thus regenerated, serves to chloridize a fresh portion of oxide of copper, and so on indefinitely. The bath or solvent liquor is conveniently made by adding proto-sulphate of iron (copperas) to a strong solution of common salt, and this once prepared there is no consumption of chemical reagents, except the metallic iron used in precipitation and an amount of salt to supply unavoidable losses.

At Ore Knob, the method pursued in applying this process is as follows.—The ore coming from the mine, after sorting, if necessary, is dried on a kiln 20x40 feet in size. It is then removed to the mill-house, where it is crushed, first, in a Blake's Breaker, from which it falls into the hopper of a pair of Cornish rolls thirty inches in diameter; after passing these the ore is conveyed by a system of cup elevators to a compound revolving screen, the inner sieve of which contains ten meshes to the linear inch, the outer forty. The fine ore falls into a large bin below, while the coarse ore failing to pass through either of the screens is deposited in the raff-box at their base. From this it is carried by a second line of elevators to a second pair of Cornish rolls, twenty inches in diameter, and after passing through these is taken by elevators to another screen, the raff from which falls into the box before mentioned, there mingling with the larger amount of raff which is treated as above stated. Thus all the raw ore is passed through a forty-mesh sieve before falling into the bin from which it is drawn at the bottom (as shown in the accompanying plan) into the car for conveying it to the roasting furnaces.

These are at present six in number, standing in a solid block 32x90 feet, enclosing which is the furnace house, 52x100 feet. The fire boxes, 2x2½x6 feet are in pairs between the furnaces, and communicating directly with the lower hearths. The heat passes from end to end of the hearths, and from the back of the upper hearth the waste gases escape into chimneys thirty feet high; one chimney serving for two furnaces. These furnaces are three-hearthed reverberatories, 9x18 feet within, constructed of red brick. The ore is charged through hoppers on the upper hearth in portions of one ton, and remains twelve hours on each hearth; it is moved from one hearth to that next below it through drop-holes, and when the roasting is completed, is drawn into the arch-ways below the bottom hearths through similar openings. During the exposure of thirty six hours it is rabbled at intervals of three quarters of an hour, through doors in the ends of the furnaces, and in this time the amount of sulphide is reduced to about four tenths of one per cent. (4-1000 of the weight of the ore.) Two shifts of four men each tend the six furnaces, and roast twelve tons of ore in twenty-four hours, with a consumption of from a quarter to a half cord of wood per ton of ore.

The average composition of the roasted ore is represented by the following analysis:

Copper, as sulphate	3.76 per cent.
" as oxide	7.75 " "
" as sulphide	.39 " "
Total	11.90 per cent.

This ore is now conveyed to the stir-tanks, which are eight in number, eight feet in diameter, and five feet deep, with raised conical bottoms. These are each charged, once in twenty-four hours, with three thousand pounds of roasted ore and fifteen hundred gallons of the solution of protochloride of iron and common salt, marking about 22° Beaumé and heated by steam to 160° Fahrenheit. The mixture is kept in agitation for eight hours, by means of suspended stirrers consisting of a vertical shaft with a horizontal blade at the lower extremity, while at the top is attached a bevel gear, which communicates to the stirrers a speed of twenty-five turns a minute. After eight hours, the stirrers are stopped and the contents of the tanks allowed to settle for four hours, when the clear liquor is drawn off into the precipitating tanks, and the remaining portion, holding peroxide of iron and fine particles of gangue in suspension, into subsiding tanks. The sand or coarse residue remaining is then washed, first, with hot strong bath, and then with a weaker solution. These washing liquors are allowed to settle in the subsiding tanks when the clear portion is drawn off into precipitating tanks containing iron. The wet sands are then removed from the stir tanks to leaching hoppers, where a portion of adhering solution containing copper is recovered.

The slimes are allowed to accumulate in the subsiding tanks till these are about one-half full, when they are washed with bath and water, till they contain only about one-half of one per cent. of copper, and are then run into large catch-pits outside of the house, where they are drained and sun-dried, to be further utilized for the iron contained in them. The subsiding tanks are twenty in number, ten feet in diameter by five deep, occupying two floors. They are situated on either side of the small engine and pump, and, therefore, not seen in the section given.

The strong liquors from the stir-tanks are capable of holding fifty pounds of copper in solution to the hundred gallons, but weaker solutions are desirable as they lessen the risk of the deposition of dichloride of copper on cooling. Thirty pounds of copper to the hundred gallons is found to be a convenient strength. The hot and strongly colored liquors are run through launders into the precipitating tanks, as already noticed. These are twelve in number, twelve feet in diameter, by five deep, containing each about 12,000 pounds of scrap iron; the temperature is here maintained at 160° F. by the injection of steam; from twelve to eighteen hours suffice to precipitate all but a trace of the copper from the liquors, which are then drawn off into a lower tank, and thence pumped up to the stock tanks, to be again used on a fresh portion of roasted ore. For the precipitation of copper, wrought iron is much preferable to cast iron; it is quicker in its action, and does not give off scales and graphite, thereby rendering the copper impure, as cast metal does, and finally, the cement is more easily detached. The copper is removed from the precipitation tanks, when they contain from four to five tons each. The consumption of iron is seventy per cent. of the pure copper produced. The cement copper is now washed, dried, and packed, and contains generally from 75 to 85 per cent. of copper; the impurities are chiefly peroxide of iron and fine earthy impurities from the gangue. Special lots of the cement suited for the manufacture of pure copper salts, have, however, contained less than four per cent. of foreign substances; a complete analysis of such a lot is subjoined

Copper	96.49
Metallic iron	.15
Peroxide of iron	.97
Iron as chlorides	.18
Chlorine	.27
Sulphuric acid	.20
Silica and insoluble gangue	1.04
Graphite	.23
Other impurities—soda, oxygen, etc	.47
	100.00

The cement manufactured at Ore Knob costs a little under eight (8) cents for the pound of copper, including all expenses for mining, treating, and packing. Of this sum nearly two cents is for metallic iron, owing to the expense of transporting the scrap iron over forty-five miles of rough mountain roads, from Marion, Virginia, the nearest station on the Va. & Tenn. R. R. A graded turnpike is now in contemplation between the mines and the railroad, which will materially reduce the obstacles in the way of hauling. A great economy will be effected by the substitution of sponge iron made at the works for wrought iron scrap.

The working of the Hunt & Douglas process was begun here in May, 1874, and since the last of June, it has operated in a regular and constant manner. Up to December 31st, 1874, viz., in six months, an amount of cement equal to more than 400,000 pounds of fine copper was produced. This has been shipped and sold to various smelting companies, but a refining furnace is now being constructed to convert it on the spot into ingot copper.

The accompanying sectional view of the works shows all the various steps in the treatment of the ore, from the shaft's mouth to the packing house.

The satisfactory results which have been obtained here by the Hunt & Douglas process give much reason to hope for its extended application in this and other copper producing regions, since, with proper management, good and very economical results are obtainable.

DISCUSSION.

Dr. STERRY HUNT referred to his communication on the Ore Knob Mine and some related copper deposits, made to the Institute at its meeting in October, 1873, and published in the second volume of Transactions (page 123). The results of later investigation, as here given by Mr. OLCOTT, have confirmed his view that the Ore Knob deposit is a true fissure-vein of great extent and value, and have shown that the rich black ores are here, as at Ducktown, replaced in depth by yellow sulphurets. He referred to the results of the working of the Hunt & Douglas copper process at this mine, as previously described by him in the ENGINEERING AND MINING JOURNAL, and said that the estimates then given were based on the treatment of the black ores, of which the upper portions averaged not less than twenty-five per cent. of copper, as shown by the returns for several car-loads sent to Boston and to Baltimore. The calcination of these was more easy and rapid than of the harder unaltered yellow ores, but in their treatment in the Hunt & Douglas process they were found to yield so large an amount of slimes from precipitated ferric oxide, that it was not easy to work them economically with the plant adopted; and, therefore, the ores now treated are the lower grade and harder yellow ores. As a result of this, the six furnaces, instead of roasting daily 15 tons of 2000 pounds of ore of 15 or 20 per cent., now furnish little over 12 tons of ore of 12 per cent. of copper; so that the present yield of copper is not over 3000 pounds daily, and the expense of production is somewhat increased. In accordance with the wishes of some of the directors, blast-furnaces have been erected for the treatment of the rich black ores. At the same time, the satisfactory results of the present moist process are such, that they announce in their Report of January, 1875, the immediate extension of the plant for its application.

The solvent of the copper in this process being a neutral one, many of the impurities which contaminate cement copper made in the usual way are absent, and, as a consequence, the treatment of the cement is very simple. Instead of fusing it with a portion of sulphuretted ore, to make blister copper, as is usually done, it has been found by the Revere Copper Co., who purchased the greater part of the 400,000 pounds of copper produced by the works at Ore Knob, last year, that a single fusion, without addition, suffices to give fine copper. For the future the cement will be treated at the mine.

Dr. HUNT mentioned, also, that works are now in process of erection at Phenixville, Pa., adjoining those of the Schuylkill Copper Works of Mr. CHARLES M. WHEATLEY, for the treatment of low grade copper ores of Pennsylvania by the Hunt & Douglas process. A company of New York capitalists, with Mr. WHEATLEY as president, and Mr. W. S. CHURCH for superintendent, has charge of the enterprise. The works were begun January 1, and two buildings have been erected; one 72×30 feet, and the other 62×36 feet. These will contain a forty-horse-power engine, with crushing machinery, furnaces, and the necessary plant. The severe frost of this winter has greatly retarded operations, but it is expected that the works will be in operation in May.

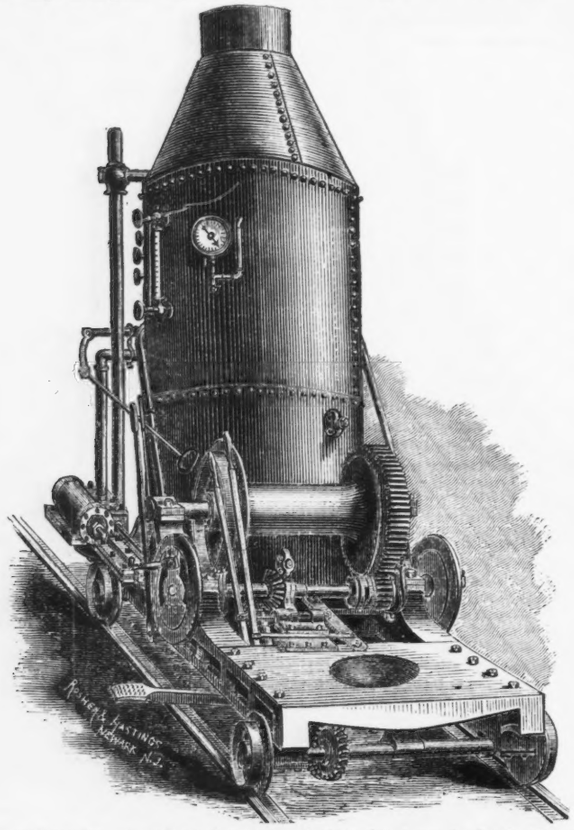
Texas Minerals.—The following extracts from a private letter are of interest, because they correct wild and mischievous reports that had been circulated. The writer of the letter is personally known to us as an experienced and reliable metallurgical engineer:

"LA GRANGE, TEXAS, *July* 29, 1875.

"When I left New York for this State, I thought I was coming to a rich mineral country, according to A. R. ROESSLER's sayings; but upon examination I find the lands he reported to be so rich in silver, &c., to be good for nothing. I traveled over 200 miles by wagon through the counties of Llano, Mason and San Saba, but could find nothing of any value except iron, of which there are immense quantities of very good quality, and manganese; but they are of no value, as they are too remote from transportation. On the manganese there has been some work done in the hope of finding something more valuable, but I am afraid that the parties will have to dig a long time before they will find anything else. The mine has been leased by a gentleman from Austin, who, somehow or other, got it into his head that there was gold there; in fact, he showed me gold which he said, he himself worked, or saw worked, out of the ore in New Orleans. I made several tests, but could find nothing, and my opinion is that he has been sold in leasing the property."

Mundy's Improved Portable Hoisting Engine.

THE engine which we illustrate herewith, was built for work on the new City buildings, Philadelphia, and has several improvements which commend it to those having occasion to use such a machine. It is a plain slide valve, double cylinder engine, (the cylinders being 6x12 inches); double link motion allows of reversing the engine. The arrangement of bevel gear and worm wheels for



transmitting the power from the engine shaft to the drum is clearly shown in the accompanying cut. The hind wheels are keyed on the 4-inch axle, while the front wheels run loose. The stop is for a 16-inch mast 100 feet high, and all the parts are proportioned for hoisting loads of from one to five tons.

Mr. J. S. MUNDY makes a special patent friction pumping and mining engine, of from 5 to 60 horse power, which is highly spoken of and, for intermittent work, like pile driving, will do much more work than any clutch engine. On mining engines the frame is extended out behind, and made heavy to support a large drum. For further particulars of these and his convenient stationary engines, we refer to the manufacturer, whose address will be found in our advertising columns.

Pay Day at the Mines of the Lehigh and Wilkes-Barre Coal Co.

14,000 EMPLOYEES—$400,000 A MONTH.

PAY DAY at the mines is the great day of the month. It is looked forward to with pleasure by every one—the miner, the laborer, the merchant, the women and the children.

About the 7th of the month, the pay-rolls are received at the main offices. These are made up at the different collieries and other places by clerks appointed for that purpose. These rolls are verified, and almost at once the work of counting the money is begun. While this is going on "checks" are made out and distributed among the men. These "checks" are statements of the accounts for the month ot the different persons employed by the company, with a receipt to be signed, detached, and handed in when the pay is received. As the men receive the "checks" two or three days before they are paid, they have plenty of time to examine them, and if they are not correct, to report errors to the office.

The work of counting out the money is a big job. As we have said, the company has 14,000 employees. There is a regular account with each man, and the amount due each ranges from fifty cents to three or four hundred dollars. The account is carefully examined and entered upon the pay-roll. The clerk sits with a pile of money within his reach, equal to the total amount of the roll, and begins with number 1. He glances at the amount due, counts it and hands the money to another clerk who counts it and places it in an envelope, on which is endorsed the colliery, the emyloyee's number and initials and the amount. This is continued until the bottom of the pay-roll is reached. If the money comes out even it is fair to presume that no mistake has been made, but if not, the money is taken out of all the envelopes and re-counted. The clerks are so accurate that this is seldom necessary. The counting requires four days of the most laborious work, and when it is finished the pay-car starts on its round.

The car is handsomely finished and elegantly furnished. In the rear is an open platform with a railing at the end, inside of which stand two policemen—THOMAS C. WILLIAMS and S. F. PEELER—whose duty it is to see that the crowd keep well closed up, and to guard the treasure. A glass partition separates the paymaster, MR. SAMUEL ROBERTS, from the employees. At some of the large collieries as many as 3,000 men are sometimes about the car, anxiously awaiting their turn. A man approaches the window and hands Mr. CAMERON STRUTHERS, the cashier's clerk, the receipt which is detached from the "check." He hastily glances at the number and calls it out to Mr. ROBERTS. The latter has before him long tin boxes with the envelopes closely packed. Long experience enables him to single out the envelope in an instant, and he calls out the amount to Mr. STRUTHER'S, and if it agrees with that upon the "check," the envelope is handed to the employee. The work is done with great rapidity, as many as 800 being paid in an hour. The scene about the car is a lively one. Old gray-haired miners, young men and breaker boys press for a good position, while women and children stand eagerly gazing on the scene. Sometimes one man will take twenty or more receipts, and will be handed the envelopes. When he leaves the car a mob closely follows him out of the crowd to some quieter spot where the envelopes will be distributed. Inside the car the scene is equally busy. The clerk is continually intoning the numbers, and Mr. ROBERTS responds with the amounts. Mr. AYRES, the cashier, closely watches the operation, and lends his available aid when any question arises. A couple of carbines stand in the corner within easy reach, and one of the half-opened drawers of the table seems full of pistols. This provision of firearms is a necessary precautionary measure, but, we are glad to say, it has never been necessary to use them. Mistakes are seldom made, the clerks do not average one a month. The car travels about four hundred miles in the four days allotted each month. The officers and their assistants take their meals on board the car, which is furnished with a dining-table. Accompanying the party are an engineer, fireman and brakeman. THOMAS MEENKINS, of Wilkes-Barre, fills the latter position. He also takes care of the car and is a very useful man.

As may be supposed, the whole work is thoroughly systematized. Without this and the utmost care, the division of four hundred thousand dollars among fourteen thousand men would be the work of a year, instead of ten days.—*Exchange.*

The Pelouze and Audouin Condenser.

DURING December, 1872, MESSRS. PELOUZE and AUDOUIN received their first French patent for a new method of condensation, based upon HALLEY'S vesicular theory of vapors, and upon the principle that liquefaction of the globules thus held in suspension is brought about by contact of the particles either with solid surfaces, or with each other.

After many months' trial of their machine at a station of the Paris Gas Company, and some discussion of its theory and merits before the French Academy of Sciences, and by the Gas Journals of France, an illustrated article, translated from the "Comptes Rendus," was published in the London *Journal of Gas-Lighting*, of October 7th, 1873, and most favorably commented upon by the editor.

In January, 1874, the performance of an experimental machine induced the San Francisco Gas-Light Company to construct a large condenser, with 20-inch connections, which has been working most satisfactorily since April of that year, the first of its class in America.

On May 26, 1874, MESSRS. PELOUZE & AUDOUIN received their patent from the United States; while another patent was granted to myself, for certain novelties in construction, on July 21st of the same year.

As a result of the erection of the San Francisco condenser, a correspondence arose between the patentees which led to the uniting of their interests, and the recent allotment to myself of the work of introducing the perfected condenser to the notice of American gas-makers.

"A Treatise on the Science and Practice of the Manufacture and Distribution of Coal Gas," which brings the record of this great industry down to the latest dates, is now reaching its close. In chapter XXXII. of this admirable work (London *Gas-Light Journal*, September 29, 1874,) occur the following sentences:

"Amongst the most novel and interesting contrivances for the purpose of condensing the objectionable vapors of gas, is the method patented by Messrs. PELOUZE and AUDOUIN—both names honorably associated with the science of gas-lighting—which differs entirely from any hitherto mentioned. * * Report speaks very favorably of it, and it may be regarded as a beautiful scientific instrument."

Coal gas usually leaves the hydraulic main a temperature of from 110° to 140° Fahrenheit, heavily charged with the vapors of tar and ammoniacal liquor.

The cooling process effected by the usual condensers arrests much of these liquids; but a notable percentage of the liquefiable matter passes on in the form of a sort of fine spray composed of an infinite number of microscopic globules.

Various forms of apparatus—for the most part bulky and costly—are used to disentangle these troublesome little particles from the flow of gas; yet it is rare to find a gas work where the bottom of the purifiers, or even the lime itself, is free from coal tar, or gas liquor, or both together.

More than this—what tar and gas liquor is thus separated by the older appliances is frequently so diluted that it is suffered to run to waste, thus reducing the value of the residuary products to an important extent.

Every gallon of tar now thrown away would save six-tenths of a bushel of coke in the furnaces; while each gallon of gas liquor has an intrinsic money value, however blind we may be to the fact. These liquids also, unless properly and completely arrested, block and impede the final processes of purification at every step.

In regard to the question of using coal tar to heat the retorts, it may not improperly be observed that the form of tar-furnace given by Mr. BUIST, of Halifax, is the most simple and efficient yet presented. A bench can be altered from coke-fuel to tar-fuel in two hours, and returned to coke in twenty minutes. A bench of five retorts will consume 90 gallons of tar per diem, against 54 bushels of coke, so that coal-tar is worth 60 cents per gallon when coke sells for 10c. per bushel.

It will be found where a very powerful multitubular condenser is followed by a Pelouze and Audouin condenser, that the latter will arrest from ¾-gallon to 1½-gallon of tar per ton of coal worked, which, in most works, runs to waste, or is worse than wasted. In very many works the existing condensers are so inefficient that the value of the new machine is doubled; while in one gas work, with old-fashioned condensers of enormous power, *but using the Rocky Mountain lignites*, this machine actually separates four gallons per ton. How viscous and obstinate the tar, and how perfect the action of the Pelouze and Audouin condenser must be in this case, I leave to the consideration of my readers.

It will be incredible to many that coal tar is so intimately entangled as to pass through a washer and through three lime boxes of great surface, appearing in large quantities in the street-drips; but such a phenomenon does occasionally occur, even in works of recent construction.

One stereotyped objection to the use of coke as filling for scrubbers is that

the interstices choke so completely with tar as to leave only small sinuous passages for the gas. That this is valid is proven by the action of several London companies, who run a train of scrubbers until the back-pressure has been worked up to three inches by the accumulation of tar in the coke.

And in the purifiers it is rare to find the bottom trays of lime free from tar, which interferes with the proper action of the lime, and increases back-pressure.

The fact is that coal-tar is a worse enemy than the old school of gas-makers will readily admit, while a Pelouze and Audouin condenser, in conjunction with a few tar-furnaces, converts it into a pecuniary friend which can never become "a drug in the market."

The value of ammoniacal liquor will never be thoroughly understood until the veil of mystery is removed from its conversion into the saleable forms. Because the sulphate has hitherto been considered as the necessary base of *all* the commercial preparations, few companies are ambitious enough to look beyond the production of that salt. So few, in fact, are making even the sulphate that it is imported regularly from Europe; while 600 American companies are destroying a million of dollars' worth of meters per annum with one-quarter of their ammonia, while the other three quarters pass off through their waste drains.

Now, any instrument which shall hasten the sale of aqua-ammonia, *on tap*, by every grocery in the country, and shall reduce the water, *by reducing the ammonia*, in the scrubbers, is fairly entitled to attention. The manufacture of the high grades of aqua-ammonia, *without the use of acids*, is simple enough, though outside the scope of this article. The French experiments gave a ton-yield from the Pelouze and Audouin condenser of 3 gallons of gas liquor, of 7·9 Beaumé. This is equal to $\left(\frac{152}{152-7\cdot9}\right)$ a density of 1·055, or say 22-ounce liquor; a result which will seem almost incredible to any one at all familiar with the behavior of ammonia carried in *cold* gas. In other words, about 40 per cent. of the ammonia carried at the scrubber inlet is arrested by the interposition of the Pelouze and Audouin condenser, and the quantity of water necessary in the scrubber is reduced by a similar percentage.

These are the results of the experience of fifty gas-works, during long periods, with the Pelouze and Audouin condenser.

The gas-flow is broken into a multitude of jets of one-sixteenth of an inch in diameter, which play incessantly against blank plates facing the apertures at suitable distance. Two repetitions of this impact or percussion suffice, practically, to burst the liquid envelopes of the little globules; the liquids pass from vaporous to massive form, and (after trickling down the faces of the plates) find their way in a steady stream out of the overflow.

The condensing drum accommodates the number of its working jets to the volume passing, and is only 12 inches diameter by 12 inches deep, for a machine to pass 150,000 cubic feet per day.

The pressure at which the jets should work varies, according to the coal and distillatory methods employed, from 5 to 25-tenths, the higher pressures being necessary in the case of the lignites; but in any case the back-pressures of the other apparatus find such simultaneous reduction that the duty of the exhauster is not appreciably increased.

The condenser works just as well without, as with, an exhauster; and may be placed with equal advantage upon the vacuum, or upon the pressure, side of that machine.

The Paris Gas Company, which sent out during 1874 the enormous volume of 5,700 millions cubic feet, uses the condenser at each of its ten heavy stations; and the verdict of every gas-manager who employs it is in its favor.

The main features of the Patent of May 26, 1874, are the combined bye-pass, and the differential gauge. The former cheapens the machine to the purchaser, while it adds to its compactness and efficiency; the latter is a three-fold, non-oscillating gauge, which is admired by such engineers as have examined it.

In conclusion, nothing but my absolute knowledge of the merits of the Pelouze and Audouin condenser could have induced me to share its fortunes, and to guarantee its construction and performance.

JAS. R. SMEDBURG in *Gas Light Journal.*

Remarks on the Combustion of Smoke in the Furnaces of Steam Boilers.

READ BY M. EMILE BURNAT AT THE SESSION OF THE SOCIÉTÉ INDUSTRIELLE DE MULLHOUSE, OCTOBER 27th, 1858.

Translated for "THE ENGINEERING AND MINING JOURNAL" by Chief Engineer B. F. ISHERWOOD, U. S. Navy.

THE following article has never appeared in English, but contains merit enough, I think, to be laid before the readers of the Journal. It destroys the very prevalent illusion of the great imperfection of the combustion in the furnaces of ordinary steam-boilers, which has given, and still gives, rise to many contrivances, based on a misapprehension of the real facts, for remedying what causes but a small loss, which cannot be prevented without introducing greater ones; and to many affirmations of impossible results said to be obtained from these inventions.

The data employed by the author are for the extreme case of a highly bituminous coal, burned under conditions to produce the greatest quantity of smoke. Of course, his calculations give maximum results for the most imperfect combustion possible in an ordinarily arranged furnace. When anthracite or steam-coal is used, and fired in the proper manner for obtaining economical vaporization, the loss due to imperfect combustion sinks to insignificance. The real value of smoke-burning, as stated by the author, is the greater salubrity and beauty of the atmosphere, and the greater cleanliness of the objects in it, when free of soot.

In making the following translation, I have taken the liberty to effect a necessary correction in the author's data, as regards the calorific power of hydrogen. He has adopted FAVRE and SILBERMANN'S determination of this power as equal to the raising of a weight of water at the temperature of 32° Fah., of 62031.6 times the weight of the hydrogen, 1° Fah. Now this determination assumes that the temperature of the hydrogen and oxygen gases before combination was 32° Fah., and that after combination the temperature of the product was reduced under the atmospheric pressure first to 212° Fah., when that product was condensed to water with the liberation of 965.7 Fah. units of latent heat for every unit of weight of the product, and then the further reduction of the temperature of this water to 32° Fah.

When, however, the combustion takes place in the furnace of a steam-boiler, all the gases produced pass off at a temperature above 212° Fah., and consequently the latent heat formed by the union of the hydrogen and oxygen is not liberated because the steam is not condensed. This latent heat must, therefore, be deducted from the quantity given by FAVRE and SILBERMANN, for it never was in the furnace. As one unit of weight of hydrogen combines with eight units of weight of oxygen to form nine units of weight of water, the proper deduction on this account from the 62031.6 units of heat is (965.7×9=) 8691.3 Fah. units, leaving (62031.6—8691.3=) 53340.3 units, from which must be further deducted the difference between the specific heat of water and of steam for the range of temperature between 32 and 212° Fah.=180°. The mean specific heat of water between those temperatures being 1.0050, and of steam 0.4805, the difference 0.5245 multiplied by 180 and by 9=849.69 Fah. units, which being substracted from the 53340.3 leaves 52490.6 for the calorific value of the hydrogen, instead of the 62031.6.

I have been particular to give these details because, in calculating the heating power of the hydrogen of coal burned in the furnaces of a steam-boiler, authors of the highest authority, RANKINE among many others, have, by neglecting to discriminate between the conditions of FAVRE and SILBERMANN'S experiments and those of the furnace of a steam-boiler, given the calorific value of the hydrogen constituent of the coal too high by the difference between 62031.6 and 52490.6 Fah. units of heat per unit of weight of hydrogen.

I have also corrected the calorific value of the unit of weight of carbon burned to carbonic oxide, given by the author at 2880 Fah. units, to 4451.4 units of heat, besides making corrections in the specific gravities of the gases of combustion; otherwise, I have reproduced the author in his integrity.

B. F. ISHERWOOD.

I propose to examine the following question: What, in proportion of quantity of water vaporized by unit of weight of combustible, is the gain possible to be derived from the combustion of the smoke in the furnaces of steam-boilers?

I have often heard the statement that the smoke escaping from the chimnies of manufactories is a cause of considerable loss. In several reports of experiments I have also seen the announcement of extraordinary results from smoke-burning apparatus, whose sole merit consisted in effecting the disappearance of the dark color from the gases produced by the combustion of coal, for they contained no peculiarity of design capable of obtaining a better vaporization from the combustible.

I have, consequently, investigated the economy which would result from smoke-burning, on the supposition that not only the coloring of the smoke was entirely prevented, but also (a very difficult hypothesis to admit in practice) that no excess of air was employed for such purpose with its resulting production of a new loss.

Now this economy is excessively small. And, as the very simple considerations showing that fact are not given, I believe, in any special work, I have thought it would not be useless to submit some details on the subject.

To appreciate the benefit resulting from perfect combustion, we must first assume a furnace in which it takes place under determined conditions, since in taking for standard any other furnace, we might find the addition of a smoke-burning apparatus gives an economy which could have been obtained, perhaps, simply by means of some modification in the draught, or by some improvement in the management of the furnace.

The analyses of the gases of combustion escaping under different conditions from a chimney, which are contained in a memoir by M. COMBES, published in the "Annales des Mines," vol. XI., 1847, pages 149 and following, show their composition to vary enormously according as the smoke is deeply colored, lightly colored, or nearly colorless. To each of these conditions corresponds a different loss, and we habitually judge that the blackest smoke is from the most imperfect combustion and is accompanied by the greatest loss.*

To ascertain, in the first place, how a given interval of time, say 100 minutes, is divided between the three conditions presented by the smoke, I have made a great number of trials, taking care to vary in widely-differing proportions both the quantity of coal burned per hour per square foot of grate-furnace, and of air admitted to the ash-pit. By thus operating with highly bituminous and smoky coals, I found the following extremes:

Of 100 minutes, black smoke occupied 32, lightly colored smoke occupied 33, and colorless smoke occupied 35.

Of 100 minutes, black smoke occupied 4, lightly colored smoke occupied 27, and colorless smoke occupied 69.

The first corresponds to a consumption of 41 lb. of coal per hour per square foot of grate-furnace, and to 96 cubic feet of air per lb. of coal. The last corresponds to a consumption of 11 lb. of coal per hour per square foot of grate-surface, and to 256 cubic feet of air per lb. of coal. The furnaces I used had no special arrangement. I believe that by adopting for the base of our calculations the figures 10, 30, and 60, of which the last corresponds to the period of colorless smoke, we shall have mean conditions rather favorable but not at all exceptional.

Smoke consists of the following substances: aqueous vapor, oxygen, carbonic acid, nitrogen; then, the combustible gases: oxide of carbon and hydrogen; finally, the smoke properly and popularly so called, composed of solid carbon suspended in a state of minute division in the aqueous vapor and gases above mentioned. There must be added the fragments of coal or coke swept out of the furnace by the force of the draught.

The analyses made by M. COMBES take account of only two of these elements: the aqueous vapor and the carbon.

Let us first ascertain the quantity of water formed.

The water product of the combustion of 100 parts by weight of an average coal composed of 83 parts of carbon, 5.5 of hydrogen, and 9.5 of oxygen, is: 8×5.5+5.5=49.5. Each unit of weight of hydrogen combines during combustion with 8 units of oxygen to form 9 units of weight of water. This weight of water of 49.5 (say) lb. of water represents about 1300 cubic feet of aqueous vapor.

The black carbon escaping from the chimney is, doubtless, at first dissolved for the most part in the hydrogen, and mixed with the enormous bulk of aqueous vapor just stated. It precipitates when the temperature sensibly lowers, which explains, perhaps, why steam super-heating pipes (those of M. HIRN, for example, or others) placed in the back smoke-connexion of a boiler before the return of the gases of combustion, are not as promptly covered with a thick coat

* This is generally true; nevertheless, we must not believe that *in all cases* the loss is proportional to the smoke's depth of color, for there must also be taken into account the invisible but combustible gases likewise present. Thus, in the frequent experiments of passing the gases of combustion from one furnace into another containing coke or coal partly consumed, it sometimes happens that while the chimney discharges only colorless gases, yet their analyses often show greater losses than in the case of black smoke.

of soot as those which are placed at the end of the boiler adjacent to the chimney.

I have been much embarrassed to estimate the loss due to the carbon. Its determination would require experiments which seem to me very difficult to make. In a memoir published in the "Bulletin de la Société d'Encouragement" for 1855, page 473, the carbon which escapes combustion is estimated at 5 per cent. of the total weight of coal burned on the grate. This figure serves as the base of a calculation by which the author, M. DELEZENNE, finds that in twelve hours there fall on the city of Lille 14,000 lb. of soot, causing each inhabitant to breathe about 0.88 lb. of carbon per day; but this calculation is merely approximate, and the data are evidently arbitrary.

TO BE CONTINUED.

CORRESPONDENCE.

Formal Opening of the Edgar Thompson Steel Works (Limited.)

PITTSBURGH, Sept. 4, 1875.

TO THE EDITOR: SIR—The formal opening of the EDGAR, THOMPSON Steel Works, of which you gave a full description in your issue of July 3d, took place to-day. Very handsome and stylishly gotten-up invitations having been issued to our leading Railroad and Iron Kings, prominent business men and journalists, they assembled at Union Depot this A. M. at 10:20, and found in waiting a special train, which conveyed them quickly to the EDGAR THOMPSON Works, some eleven miles from this city, beautifully and most conveniently located between the lines of the Pennsylvania Railroad and P. & C. Railroad, and within 500 yards of the Monongahela River, whence they draw their supply of water.

As you have already published a complete description of the building, machinery, etc., it will be unnecessary to repeat it here. We were invited out today to witness and take part in the formal opening of the works. The "Press gang" were under the special charge of WM. P. SHINN, Esq., the Secretary and Treasurer of the Company, a thorough and practical engineer, and one of Pittsburgh's most talented, enterprising and courteous business men. Leaving the cars, Mr. SHINN conveyed us directly to the yard adjoining the Cupola House, where the pig iron is received, and explained the process of *breaking the bars as they are thrown from the cars*, thus showing the quality of the metal; and, according to quality, it is piled up ready for use. Following the pig metal, we ascended by a lift to the third floor of the Cupola House, and witnessed the process of feeding these insatiable monsters with fuel, metal and spiegel preparatory to the "blow," which we witnessed shortly after. Next, we visited the Converting House, House for Blowing Engines, Boiler House, Produce House, and then returned to the Converting House to witness the "blow," between five and six tons, which occupied, in all, about thirty minutes, and proved immensely satisfactory to the 200 or 300 visitors who were present and expressed themselves as highly pleased with the perfect arrangement and manipulation of the various machinery brought into action, and the perfect discipline, rapidity and apparent ease with which even the smallest details were carried out. After the steel had been run into the moulds, we left it to cool, and visited the Rail Mill. The chief point of attraction here was the Bloom Mill, a set of rolls which receive the red hot ingot, weighing 1 ton, from a truck, and without the aid of a single pair of tongs, or any other manual labor than that of the operator who manipulates the levers controlling the mill and the movements of the efficient little "90 devil," puts it through the rolls 8 and 10 times in as many minutes, reducing it from 12 inches square to 7¼ inches and increasing its length proportionately, makes it ready for the powerful hammer, under which it is cut into three pieces, each of which, being transferred to another set of rolls, is shortly turned out as a complete rail.

A SEVERE TEST.

After the machinery had been inspected, including the mammoth engines, which are a credit to Pittsburgh skill, the guests were conducted to the machine shop, where a steel rail had been placed in a powerful roll lathe, to test its tenacity by twisting. The rail was fixed at one end so that it could not move, while the other was inserted in a wheel, which was subjected to a slow motion, and kept running until it made two complete turns. The rail, notwithstanding this severe test, showed no signs of fracture whatever! How much more of such twisting it might stand, no one ventured to suggest; but the test was deemed amply satisfactory to the most exacting railway officials.

Having now completed the thorough inspection of the works, the several parties of guests, under the charge of the Board of Managers, D. MCCANDLESS, JOHN SCOTT, T. M. CARNEGIE, D A. STEWART and WM. P. SHINN, were conducted to a part of the establishment which they had not seen—but they all seemed to know what it meant, at a glance. There were three large tables spread; numerous waiters flitting about; ominous baskets, containing a liquid supposed to act upon the contents of the human "converter" somewhat after the fashion of spiegel upon the decarbonized metal! The members of the press—perfectly at home here—did not need to inquire as to the use of this or that article, but got through this part of the programme with the greatest ease and self-confidence. Indeed, all the guests did ample justice to the lunch, which was superb, and called forth commendatory remarks, in which the Edgar Thomson Steel Company, and SCHLOSSER, the caterer, of the Duquesne Club, shared about equally.

After dinner, the guests were called to order by JOS. WOODWELL, Esq., and impromptu speeches were made by Mr. WEEKS, of the *Manufacturer*; Mr. HOLLEY, chief-engineer of the works; Mr. BARNES, resident engineer; Mr. JONES, general superintendent; Mr. SHINN, secretary and treasurer; Mr. OLIVER, of LEWIS, OLIVER & PHILLIPS; MENDES COHEN, Esq., President, P. & C. R. R.; and C. ZUG, Esq., of ZUG & Co. Many of these gentlemen spoke of having visited other Bessemer Works in this country and Europe, but all united in pronouncing the Edgar Thompson Steel Works the finest and most complete in the world.

Calls were made for other gentlemen, but Mr. SHINN'S voice was heard announcing that the train was ready, which cut short this part of the proceedings.

On arriving at the Union Depot, at about half-past two o'clock, the guests separated, well pleased with what they had seen, and highly gratified at the hospitable manner in which they had been entertained.

Yours, etc., C. MCF.

Los Angeles, California, Oil Wells.—Continued discoveries of oil wells are being made in this county, which, the local press state, will yield better profits to the producer than the oil wells of Venango Co., Pa.

Oxygen Stores.—A singular establishment is kept up at Pantin by a M. PATRIAN, contractor for public lighting. It is in reality a factory and warehouse for the manufacture and sale of oxygen, which is kept stored in metallic reservoirs under a heavy pressure, and delivered for such purposes as the lighting of theatres and cafés, blowpipe use, inhalation and ventilation, and in air-baths.

Selected List of Patents Recently Issued,

RELATING TO MINING, METALLURGY, GAS MAKING, ENGINEERING, ETC.

Reported for the "ENGINEERING AND MINING JOURNAL" by LOUIS BAGGER & Co., Counsellors at Patent Law, Washington, D. C.

Canal locks, C. G. FORCE, Cleveland, Ohio.

The lock-walls are built upon a framework of timber, extending to near the water line, and properly sheeted and founded upon a timber and plank flooring resting upon piles. The object is to economize.

Blasting charges, R. G. BALDWIN, Leighton, Iowa.

This invention consists of a copper tube to hold the charge, pivoted to another tube which contains a sliding rod to force the charge to the foundation of the drill hole.

Excavators, THOS. Z. COLE, Galveston, Texas.

A rapid intermittent rotary motion is transmitted from the elevator-bucket pully shaft to the clearing fan or scraper, by means of a cross with pins at the ends of its four equal arms, working in the radial slots of a three armed cam mounted on the shaft of the clearing-fan.

Explosive Compounds, RAYMOND CAHUC, Toulouse, France.*

A mining powder made of nitrate of potash, sulphur, lampblack, and tanning bark or sawdust, and sulphate of iron. The process of forming this compound (which it is claimed will be incombustible at low temperature, and non-explosive except when under pressure) is, by first heating nitrate of potash, carbon, and sulphur, in the presence of sawdust and solution of sulphate of iron, till a homogeneous liquid mass is produced, then cooling and drying.

Furnaces for Melting Metals, W. E. C. EUSTIS, Milton, Mass.

The four chambers all open at bottom into the hearth. The chambers are filled with iron or steel, and gas and air are admitted at opposite ends of the induction pipe, passing down through the pieces of metal on one side of the furnace, are ignited, and the products of their combustion pass up through the metal in the chambers on the other side, and out by the down take. On reversing the valves, the direction of the air and gas is reversed, passing through the heated metal.

Wet and Dry Ore Crushers, HENRY BOLTHOFF, Central City, Col.

As a wet crusher, the ore admitted through the hopper and hollow shaft into revolving cylinder is pulped by balls, and passes out through registers adjustable vertically to raise or lower the outlet openings; thence passes through hoppers to amalgamating coppers. Quicksilver may be introduced to the cylinder; or grates may be inserted in hand holes and the pulp passed out through them into setters, where the amalgam can be separated; ore in tailings which will not amalgamate to be then smelted. As a dry crusher, ore fed dry and passes out through spaces between the staves, which are corrugated on the inner side. The cylinder is revolved by power applied to shaft, or by small friction wheels.

* We made, a few months ago, some experiments with this powder, which were quite conclusive as to its quality. It is claimed for it that it is more powerful and safer than ordinary powder, and possibly it may be so. I is simply a *very slow powder*, so slow indeed as to be quite unfit for use in seamy or fissured rock, where it consequently does not develop any high useful effect, whatever its absolute strength may be. To its "slowness" in burning is to be attributed its *safety*; all slow powders are safe. As made here by the Patentee, a few months ago, the powder was not adapted to general use, though, possibly, in the case of very hard and solid rock it might give good results.—[ED. E. & M. J.

Notes.

Calumet and Hecla Mine.—At the annual meeting of the stockholders of the Calumet and Hecla Mining Company, recently held in Boston, the following report of the operations for the year ending April 30th, 1875, was submitted. We append a comparison of the report for the year 1874:

ASSETS.	1874	1875
Cash at Boston office	$ 49,513 96	$ 159,405 59
Cash at mine	40,184 29	0,239 32
Bills receivable	16,695 47	3,754 80
Loans on call	253,640 00	
Copper on hand valued at	*1,596,650 58	*1,859,665 20
Balance due on copper	1,299 34	2,166 02
Supplies at mine	460,642 51	436,204 56
Bonds of M. R. R. R. at 80c.	8,146 67	8,146 67
	$2,426,772 82	$2,479,582 16
LIABILITIES.		
Bills payable	124,248 77	150,330 05
Drafts in transit	48,978 62	51,284 78
Loans		55,850 00
Surplus May 1, 1875	$2 253,545 13	$2,222,117 33
Divident due May 15	400,000 00	400,000 00
Actual net surplus	$1,853,545 13	$1,822,117 13

* This includes all copper sold and not delivered; in 1874, 8,841,005 lb. @ 18cts., and in 1875, 9,298,325 lb.@20 cts., which price is net after deducting the cost of freight, selling, etc.

The amount of copper smelted within the year was 20,704,783 lb., which represents the actual product of the mine. It is estimated, from the best obtainable data, that the actual cost for producing this amount of ingot copper was 12·72c. per lb., equal to $2,633,979 47. The amount of copper actually sold within the fiscal year, April 30, 1874, to April 30, 1875, was 20,247,462 lb., at an average of 20.54 cents per lb., realizing $4,160,720 16 A recent correspondent of the Chicago *Inter-Ocean* states, with regard to this mine: "The company employs 2,500 men, the monthly pay-roll amounting to $90,000, a village of 5,000 people deriving their support from employment furnished by the company. The mine is at present worked to a depth of 1400 feet, the yield of the ore averages five per cent. of pure copper, the vein being fifteen feet thick. The mine was discovered in 1865; operations were first commenced in 1867. Since the Calumet and the Hecla mines were united, in May, 1871, there has been paid out to stockholders the immense sum of $8,100 000, and during that time the stock was doubled without cost to the owners. The property now, at $158 50 per share is worth $12,680 000. The amount paid in by the stockholders was $1,200,000. The present yearly dividends amounting to $1,600,000, are divided quarterly among the stockholders of the company."

Colorado Gold and Silver Production for 1875.—The *Colorado Mining Review* estimates the yields of Gold and Silver by the mines of that State for 1875 as follows:

Georgetown District (silver)	$2,500,000
Central City District (gold)	2,000,000
Mount Lincoln and Bross (silver)	600,000
Caribou District (silver]	350,000
Gold Hill and vicinity (silver)	300,000
Other sections (gold and silver)	850,000
Total	$6,600,000

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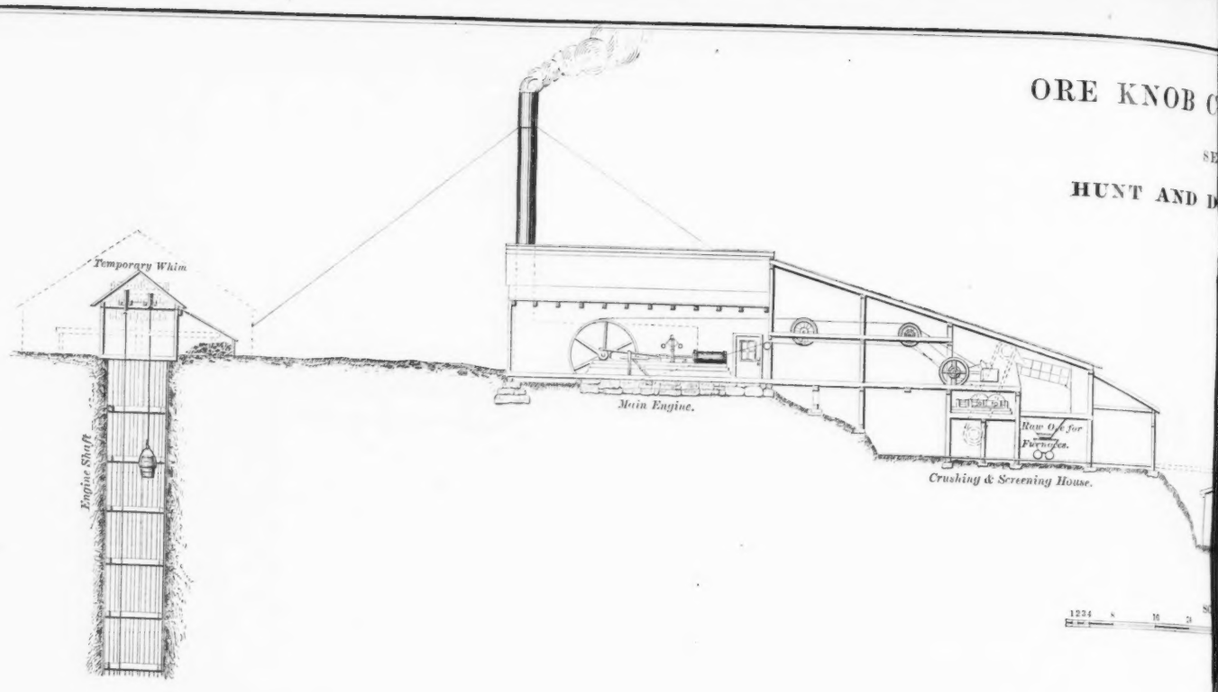
SECTION

HUNT AND DUGLAS



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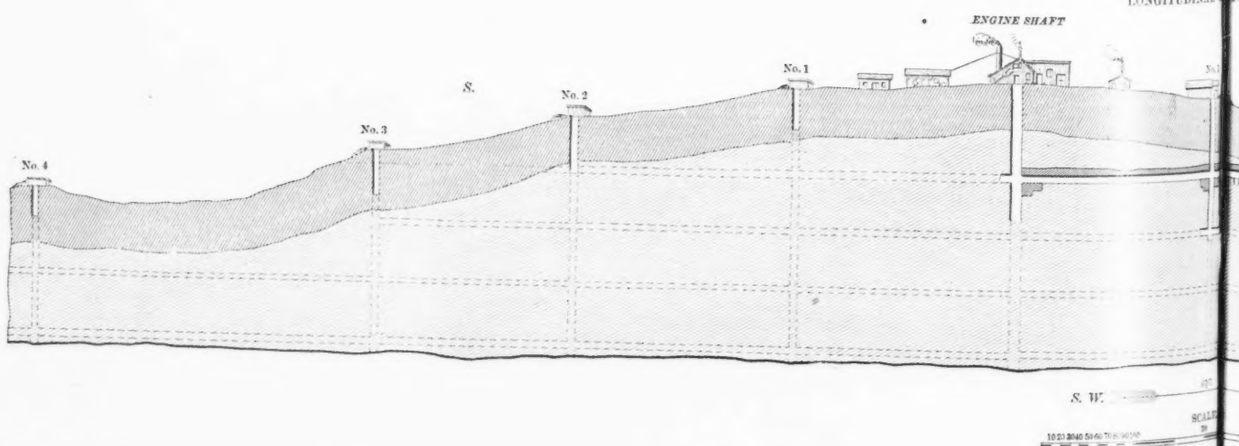
1874.

LONGITUDINAL SECTION.



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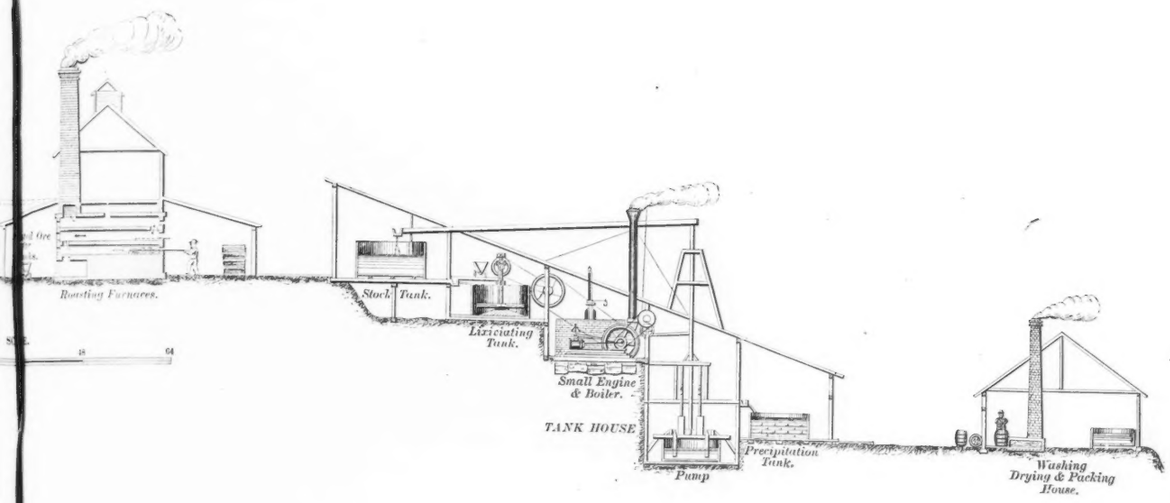

E. E. Olcott, E. M.

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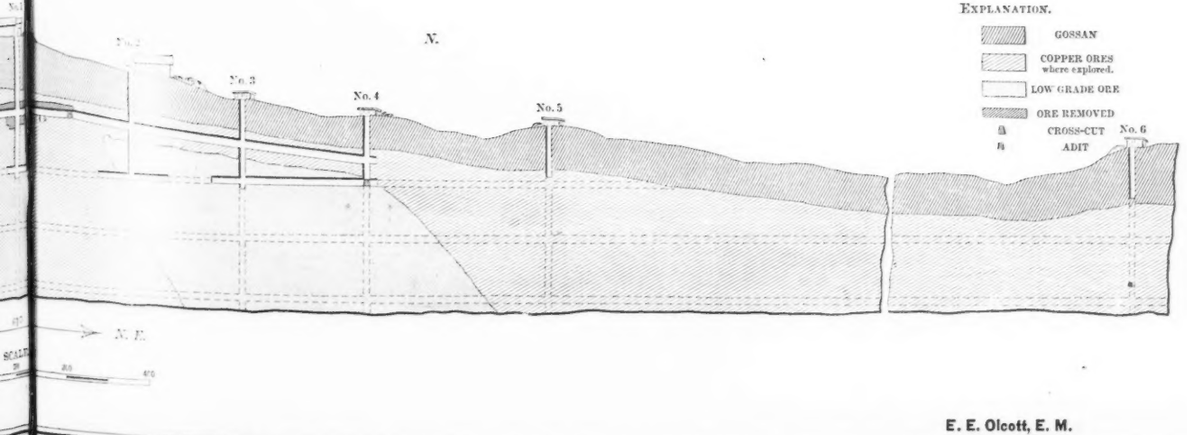

E. E. Olcott, E. M.

Notes.

Steam-pipe Jacketing.—The Stettin Vulcan Works make use of wool for clothing steampipes. A lead cylinder is laid round the pipe, and the space between, which is about 1½ inches, is filled up firmly with wool. The lead cylinder being drawn back, the wool as exposed is tied down with wire, and finally linen is sewn over the whole.

"Dysiot."—The new alloy, called Dysiot, brought into the market by ROMPEL & Co., of Homburg, has been analyzed by VON UHLENHUTH, and found to consist of copper, 62·30 parts; lead, 17·75; tin, 10·42; zinc, 9·20; with traces of iron. It can be prepared by melting together 62 parts copper, 18 lead, 10 zinc, and its price should not exceed £7 4/ per 100 kilos.

Mineral Production of Europe for 1874.—The Austrian statistician, BRACHELLI reckons the total production of minerals in all the countries of Europe, for 1874, to have been as follows: Platinum, 1025 kilogs; gold, 6900 kilogs; silver, 300,000 kilogs; pig-iron, 240,000,000 cwt.; copper, 600,000 cwt.; lead, 5,300,000 cwt.; zinc, 2·7 to three million cwt.; tin, 205,000 cwt.; coal, 4,376,000,000 cwt.; salt, ninety-five to 100 million cwt.; manganese, 1,616,000 cwt.; antimony, 5,700 cwt.

Frangibility of Tempered Glass.—It is being found that DE LA BASTIE'S glass, which is, undoubtedly, hardened by tempering, loses its molecular cohesion under a repetition of blows, and then fractures like ordinary glass. Tempered glass, submitted to hammering, presented an appearance on fracture similiar to that of *fatigué* steel, a molecular disintegration having taken place. It is feared that this alteration of structure and loss of temper may not only follow from shock, but may happen spontaneously from interior change in the lapse of time.

The Edgar Thomson Steel Company, Limited, made their first blow on Thursday, August 26th last, started their blooming mill on Friday, August 27th, and rolled their first rail on Wednesday, September 1st. The works will at once go into full operation. This company makes the ninth that is now engaged in making Bessemer steel rails in this country. The Lackawanna Iron and Coal Company will follow before the close of this year. The foundations of the Bessemer plant of the Vulcan Iron Works at St. Louis have just been laid.—*Bulletin.*

Manufacture of Emery and other Wheels used for Grinding or Polishing and Apparatus.—This invention consists in agglutinating together the particles of emery to form wheels with a composition of leather dissolved in glue; and preventing grinding wheels of all descriptions from flying to pieces when driven at high speeds, by making them thicker towards the center than at the edge, and covering the sides to within a short distance of the edge with hollowed metal plates screwed against the wheel, so that in case of rupture the parts would be held secure, as the thicker portion of the wheel towards the center could not pass through the narrower opening between the plates towards the periphery. A brush also revolves against the surface of the wheel.—*F. C. Martin, 5, Upper Hill Street, Richmond, Surrey.*

Desilverization of Lead.—The London Lead Company have just adopted a new process for the desilverization of lead, which promises to be attended with a very extraordinary degree of economy. The process is the invention of a Frenchman, named ROZAN, and was first adopted in England by COOKSON, of Newcastle. The principle of the Rozan process is much the same as that of the Pattinson process. Unlike this process, however, that of M. ROZAN is carried out by means of the mechanical agency of steam, which, conveying the oxygen to the lead, exercises a purifying influence upon it, while, at the same time, it desilverizes the ore, and extracts the silver more thoroughly than has yet been done by any other means. The steam is applied at a pressure of 55 lb., which is sufficient to support the lead and prevent it from going down into the steam-pipe. It is calculated that by this process there will be a saving of nearly one-half of the cost of labor, and other expenses will also be materially reduced.

New Anti-friction Composition for Bearings.—A new composition, being a bad conductor of heat, is recommended by M. S. COLINE, a French engineer, for the bearings of all kinds of machines, wheels and axles, as not requiring any lubrication. The following is the recipe for the composition:—Take about 25 per cent. of absestos, and the same of plumbago, and mix them very intimately and carefully together; then add sufficient liquid silicate of soda or potash to reduce the whole to a half-dry paste. This paste must then be submitted to the action of a hydraulic or other press, till it is converted into a solid mass, which is afterwards dried, either in a furnace or by exposure to the air, until all moisture has disappeared. The bearings may either be turned out of the block or moulded from the composition while in the moist state. When the bearing is finished it is steeped in hot melted paraffine, mineral wax, or in a solution of paraffine, benzole, or other mineral oil, until all the pores of composition are filled up.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Sept. 4:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co	58,747	2,113,910	45,552	1,566,555
D. L. and W. RR. Co	65,013	2,538,794	41,300	1,631,000
Penn. Coal Co	30,656	909,102	31,701	879,035
L. V. RR. Co	22,002	614,004	18,812	658,957
P. and N. Y. RR. Co	1,814	71,737	440	40,792
C. RR. of N. J	55,229	732,800	30,249	909,536
Penn. Canal	16,600	145,232	11,240	218,290
Lack. and B. RR	..	81,493	..	112 529
	250,961	7,020,077	179,294	6,016,694
Lehigh Region.				
L. V. RR. Co	88,053	917,963	80 243	2,129,820
C. RR. of N. J	32,282	294,075	31,210	721.284
D. H. and W. B. RR	2,178	51,043	3,058	27,227
	122,513	1,263,081	114,511	2,878,331
Schuylkill Region.				
P. and R. R. RR. Co	171,865	2,393 017	138,132	3,160,901
Shamokin & Lykens Val.	22,569	810,841	19,024	602,310
	194,434	3,203.858	157,156	3,763,211
Sullivan Region.				
Sul. and Erie RR. Co	..	5,557	1,339	25,968
Total	567,908	11 492,573	452,300	12,684,204
Increase	115,608	..	..	..
Decrease	..	1,191,631	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Sept. 4, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb	50,530	1,534,103
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	8,960	211,401
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	2,788	145,833
*East Broad Top	1,129	30,598
Clearfield Region, Pa.		
*Snow Shoe	895	44,377
*Tyrone and Clearfield	17,319	556,260
Allegheny Region, Pa.		
*Pennsylvania RR	3,205	251,478
Pittsburgh Region, Pa.		
*West Penn. RR	4,737	141,168
*Southwest Penn. RR	2,271	8,152
*Penn. & Westmoreland gas coal, Pa. RR.	23,667	430,078
*Pennsylvania RR	10,087	270,947
Kanawha Region, W. Va.		
*Chesapeake and Ohio RR	3,249	108,247

* To Aug. 28.

The Production of Coke for the week ending Aug. 28.

Tons of 2000 lb.

	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR	782	33,570
Southwest Penn. RR	12,826	347,548
Penn. & Westmoreland Region, Penn. RR.	419	21,524
Pittsburgh, Penn. RR	2,332	68,082
Total	16,359	471,050

Bituminous Coal Production to Aug. 1st, 1875.

The following does not include the total production, but such quantities as have been reported to this office:

Pennsylvania	5,843,076
Ohio	380,188
Maryland	1,434,098
Illinois	484,673
Indiana	28,177
Iowa	52,094
Wyoming	80,346
West Virginia	96,038
Tennessee	57,128
Alabama	35,545
Colorado	12,504
	8,503,867

The receipts at Port Richmond for the week were 80,000 tons, shipments 60,000 tons, and balance on hand 90,000 tons.

The Lehigh and Wilkes-Barre Coal Company shipped 233,919 tons of coal from Port Johnston during August.

The decrease of shipments of Cumberland Coal over the Cumberland Branch and Cumberland and Pennsylvania Railroads amounts to 64,061 tons.

The Exports of Coal from Baltimore for the week were 414 tons, and for the year, 28,890 tons as compared with 60,898 tons to the corresponding time in 1874.

Belvidere Delaware RR. report:	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	7,727	72,381	167 987
" " South Amboy	13,387	121,006	430,505
Shipments of Coal Port (Trenton)	7,485	70,040	188,829
" South Amboy	13,424	177,477	429,664

Receipts of coal at Boston, for week ending Sept. 3, and year from September 1st, 1874.

From	Week. Tons.	Previously Tons.	1874. Tons.
Alexandria and Georgetown	2,350	109,842	112,781
Philadelphia	9,786	522,380	597,108
Baltimore	300	169,977	243,905
Other places	3,806	255,771	210,696
Great Britain	—	3,397	4,140
Nova Scotia	400	30,795	80,014

Shipments from Pictou, N. S., for the week ending Aug. 28:

	Tons. Week.	Year.
To United States	822	15,283
" West Indies	—	1,107
" South America	—	1,002
" Canada	8,795	95,683
" Other Provinces	3,266	32,273
	12,883	145,348

Shipments from the Block House, Cow Bay, C. B., to the following destinations, from Aug. 24 to Aug. 31, 1875:

	Week.	Year.
Provinces	—	4,934
West Indies	—	806
United States	1,065	6,131
	1,065	11,871

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, Sept. 10, 1875.

Anthracite.

The demand for anthracite coal is not so great as a few weeks ago, and lump, in particular, is quite dull, while broken and chestnut sizes are in light request with some dealers. Coals from the other regions are exceedingly quiet and stocks are accumulating largely. The Philadelphia and Reading Company had 90,000 tons in stock at Port Richmond at the end of last week, and the Delaware and Hudson had, at the same time, about the same amount at Rondout, while, however, their stock at Honesdale was reduced to 50,000 tons, as compared with 145,000 tons at the corresponding time last year. The Lackawanna and Western Company have large stocks, while the Pennsylvania Company have some accumulation. The yards throughout the country are reported to be quite full and business must remain quiet until the cold weather, or anticipation of it, induces consumers to relieve them. Our Chicago correspondent writes us that the receipts of anthracite coal, by Lake, in that city, from January 1 to Sept. 4, were 279,666 tons, as compared with 255,728 tons for the corresponding period of 1874, showing an increase, this year, of 23,938 tons, which would indicate that that city must be very fairly supplied. Parties who have travelled through the East during the past week, give so gloomy an account of the condition of the manufacturing interests there, that we expect but little demand for coal from that source. A spurt in domestic sizes will probably occur later in the season, but after that we shall likely drop back into greater quietness than has ruled during the year.

The production of anthracite coal for the week ending September 4, was 567,908 tons, and from January 1st 11,492,573 tons. The production for the corresponding week of 1874 was 452,300 tons, and from January 1st, 1874, 12,684,204 tons. The production for the week ending August 28, 1875, was 544,547 tons. From the above figures it will be seen that there was an increase, last week, over the production of the week previous, of 23,361 tons; over the corresponding week of 1874, of 115,608 tons; and a decrease of 1,191,631 tons from January 1st as compared with the corresponding period of 1874.

Bituminous.

The bituminous trade for all descriptions is very quiet and prices are low. We are reported a contract to furnish the Spanish Navy, in the West Indies, with several thousand tons of Cumberland which is said to be the first large purchase by that Government—previous purchases having been small and made to test the coal. The output of Cumberland coal remains quite steady, and the decrease in the production this year was lessened several thousand tons during the week, which is accounted for by the strike which existed during the corresponding period of 1874. The production in the Pennsylvania districts continues of fair proportions, but is curtailed somewhat in the absence of a good demand and in the face of unremunerative prices.

Foreign and Gas Coals.—Shipments continue active in domestic gas coals on contracts made at the opening of the season, but no new contracts of importance are being made, and none are expected. We note the arrival of two cargoes of Scotch coal on contracts, and the sale of 500 tons of Block House coal, for Cuban delivery, on private terms.

Freights.—Rates from Georgetown and Baltimore continue to be weak, $1.60@$1.65 being freely accepted to Boston. Philadelphia rates continue at $1.50@$1.60 to Boston, and New York rates $1.25@$1.30 to Boston.

Philadelphia Coal Trade.

PHILADELPHIA, Sept 9, 1875.

The dealers here are delivering considerable coal and keep their yards full, receiving as much as they send, but the demand is mostly for stove size, and so much of it is made that the trade cannot be said to be improving. The Lehigh operators have as many orders as they can fill during the month, while the Schuylkill operators are

short, and it is owing entirely to the policy of very high tolls adopted by the Reading. The receipts at Port Richmond are increasing rapidly, not because stove coal is wanted there, but because there is no other place to send the bulk of the production, and a blockade will soon result from the present state of things, if no favorable change takes place. Vessels continue scarce and freights stiff at previous quotations.

The iron men continue to discuss the one-sided arrangement proposed for increasing the supply of pig metal, and fail to see that the new plan will create a corresponding increased demand for the article. They say that there is already too much iron made, and fail to see any benefit in the plan, except to increase the receipts on the Reading R.R., while the Reading Coal and Iron Co. will have to carry the iron. Some 19 furnaces on the lines of the road are said to be in such a position, financially, that they will have, sooner or later, to accept the proposition, while rumor states but five or six as being ready to accept it now.

Wholesale Prices of Anthracite Coal for Sept. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 05	5 15	5 25	5 55	6 00	4 95
‡Pittston at Newburgh	5 05	5 05	5 15	5 30	5 80	4 85
Wilkesbarre at Port Johnston	5 05	5 15	5 25	5 55	6 00	4 95
Plymouth, R. A., *Nel*	....	....	5 25	5 55	6 00	4 95
Susque. Coal Co. at Amboy W.A.	5 05	5 15	5 25	5 55	6 00	4 95
Kingston at Hoboken	5 05	5 15	5 25	5 55	6 00	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 50	5 60	6 00	5 10
Old Company's Room Run "	5 55	....	5 50	5 60	6 00	5 10
§Sugar Loaf, Hobok. & Amb."	5 55	....	5 50	5 60	6 00	5 10
Lehigh Coal Exchange "	5 55	....	5 50	5 60	6 00	5 10
Honey Brook Lehigh	5 55	....	5 50	5 60	6 00	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 50	5 60	6 00	5 10
†Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 55	4 65	4 75	5 05	5 50	4 45
Schuylkill red ash	...	....	5 05	5 15	5 55	4 45
Shamokin white and red ash	....	....	....	5 35	5 70	4 50
Lorberry	....	....	5 80	5 80	5 80	4 65
Lykens Valley	...	....	6 40	6 40	6 40	5 50

Per ton.

Freight from Hoboken and Weehawken to New York.... 40c.
" " Elizabethport & Port Johnston to N. York. 45c.
" " South Amboy to New York ..... 50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton. The expense of towing vessels from New York harbor to Rondout and back will be borne by this Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡ Prices to the Trade.

§ By Canal at New York, Jersey City and Brooklyn, 30c additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in NewYork.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va.,	——	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	5 25@5 50
Cumberland, at Baltimore	4 15@4 50	5 75@6 00
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 25; at Greenwich, Phil	4 60	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
*Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	7 00	7 50	6 50
Schuylkill Red Ash, del'd	7 00	7 50	

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

*Lackawanna grate is quoted 25c. per ton less than egg.

Williamsburgh, N. Y.
Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " " "	25 00
American " " " " "	16 00
American Orrel " " " "	11 00
Red Bank Cannel " " " "	14 00
Cumberland " " " "	7 00

Prices of Lackawanna, Plymouth and Shamokin Coal, for the Month of September, at various points.

Afloat, per ton of 2000 lb. delivered at	Elmira.	Watkins.	Ithaca.	* Syracuse.	† Oswego.	† Rochester.	‡ Buffalo.
Grate	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Egg	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Stove	4 92	5 25	5 25	5 40	6 35	6 10	6 35
Nut	4 65	5 00	5 00	5 15	6 10	5 85	6 10

† Coal is delivered to retail consumers at these points for $1.25 per ton additional to these rates.

* At this point 70c. per ton additional is charged to retail consumers.

‡ At this point 50c. per ton additional is charged to retail consumers.

Baltimore, Md. Sept. 6, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," *Pittston and Plymouth.* White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 05
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 15	4 50
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Sept. 8, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	10 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	6 25		

The market is well supplied with English cannel, and the sales have been at $24 per ton in retail lots. In Scotch and American cannel nothing has been done of any consequence. In Cumberland no change. Demand quite moderate and shipments light. Gas coals continue to arrive freely and have been delivered on previous contracts. In Nova Scotia coal nothing has been done. Anthracite has been in steady retail demand, with sales at $7 50@8 25 per ton in retail lots, and 50@100 tons at some concession. Cargo prices are nominally $6 50@ 7 per ton.—*Shipping List.*

Buffalo, N. Y. Sept. 6, 1875.

Reported by our Special Correspondent.

Prices free on board vessels here are as follows:

ANTHRACITE.

	Afloat.	F. O. B. Vessel.	Retail. Deliv'd.
Grate	$5 85	$6 35	$7 00
Egg	5 85	6 35	7 00
Stove	6 30	6 80	7 45
Nut	6 05	6 55	7 20

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co	3 50	3 25	....	2 30	....

Chicago, Ill. Sept. 6, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices of coal.

Lehigh Lump	$10 00	BITUMINOUS.	
Lehigh grate and egg	10 00	Briar Hill and Erie	@ 7 00
Lehigh stove and chest.	10 50	Walnut Hill, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Midway, Pa	@ 6 00
		Cannel	@ 9 00
Grate and egg	9 00	Blossburg	8 00
Stove and chestnut	9 50	Indiana Block	5 50
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Receipts of Coal by Lake, to Sept. 4th, 1875:

Anthracite	279,666 tons.
To same date, 1874	255,728 "
This year over last	23,938 tons.
Bituminous, 1875	116,200 tons.
" 1874	155,074 "
Last year over this	37,874 tons.

Cincinnati, O. Sept. 6, 1875.

Reported by our Special Correspondent.

No change in prices of coal.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	7½c.	——
Pomeroy coal	6c.	——
Cannel coal, according to quality	12½@16c.	——
Semi Cannel	7½c.	——

The following are the retail prices delivered:

Youghiogheny	— c.	$3 25
Pomeroy	— c.	2 75
Cannel	— c.	5 50
Kanawha Semi Cannel	— c.	3 25
Anthracite	9 50@10	——
Foundry coke	—	——
Coke, hard and soft	10 c.	——

Cleveland, O. Sept. 7, 1875.

The market remains nominally without change at our last week's quotations.

WHOLESALE.

Per ton of 2000 lb. f. o. b. vessels.

	For vessels,	On cars.
Youghiogheny Gas Coal	$4 40	$4 15
Cannel	4 50	4 15
Blossburgh	5 00	5 00
Briar Hill Block Coal	3 80	3 60
Hocking Valley	3 25	3 10
Straitsville Coal Co., lower vein	3 25	3 10
Mineral Ridge	3 10	3 25
Massillon	3 10	3 30
Tuscarawas Valley	2 85	2 70
Columbiana	2 80	2 60

RETAIL DELIVERED.

	Lump.	Nut.
Briar Hill	$5 00	$3 50
Massillon	4 50	4 00
Mineral Ridge	4 50	4 00
Columbiana	3 25	3 00
Stillwater	3 25	3 00
Tuscarawas Valley	3 25	3 00

ANTHRACITE DELIVERED.

	Grate.	Egg.	Stove.	Chestnut.
Lehigh	$9 00	$9 00	$9 50	$9 25
Wilkes-Barre	7 85	7 85	8 35	8 10
Lackawanna	7 85	7 85	8 35	8 10

—*Manufacturing and Trade Review.*

Detroit, Mich. Sept. 6, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
		Erie	7 50
Wilkes-Barre, Stove and Nut	9 50	Massillon	7 00

Erie, Pa. Sept. 6, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Sept. 6, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.

Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

IndianCreek, per ton	$2 75	Peytona cannel, per ton.	7 00
White River, "	2 75	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$9 95	Nut	9 80
Egg	9 95	Stove	10 25

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	
Brazil Block	14	Peytona Cannel	6
Highland grate	14	Indiana "	14
Block Nut, domestic use	12	Youghiogheny	20
Highland Nut, "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE (measured.)

Crushed 15c.	Lump 12c.

ANTHRACITE,

Wilkes-Barre and Lackawanna (all sizes)	$10 per ton.
Lehigh, retail	$11 50 per ton.

Louisville, Ky. Sept. 6, 1875.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

per bushel		per bushel	
Pittsburgh	8c	Pine Hill	9c.
Raymond City	9c.	Kentucky	9c.

RETAIL.

per bushel		per bushel	
Pittsburgh	14c.	Peytona Cannel	22c.
Raymond City	12c.	Buckeye "	20c.
Pine Hill	12c.	City-made Coke	15c.
Kentucky	11c.	Anth., per ton,	$10 00 to 10 50

Screened Pittsburgh per load	$3 00
Screened Raymond City	2 75
Pine Hill (Kentucky)	2 75
Cannel	$5 to 5 50

Milwaukee, Wis. Sept. 6, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.
Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Scranton	$9 50
Lehigh Prepared	10 50	Briar Hill, select	8 00
Lackawanna	9 50	Blossburgh	8 00
Pittston	9 50	Pittsburgh	7 00

New Orleans, La. Sept. 4, 1875.

Our market is entirely bare of anthracite, and the first shipments will find ready sales and command good prices.

Our stock of coal afloat on the 1st of this month was 205 boats, 7 barges. Arrivals in August, 67 boats, 14 barges, 2 fuel boats. Consumption in August, 19 boats. 10 barges, 2 fuel boats. Market very dull.

Pittsburgh coal, retail, per bbl	75c.
" wholesale	35c.
" steamboats, per box	—
" to manufacturers, per bbl	65c.
" shipments, per hhd	$7 00
Anthracite, wholesale, per ton	....
" retail, "	...
Virginia Cannel, per bbl	80c.
Scotch "	....
Mt. Carbon, wholesale, per bbl	35c.
" " retail, "	55c.
St. Bernard, wholesale, per bbl	30c.
" retail, "	....

Pittsburgh, Pa. Sept. 6, 1875.

By our Special Correspondent.

Per ton of 2000 lb. and Bushel of 76 lb.

Youghiogheny coal, ton,	$2 00	Pittsburgh retail deliv'd. per bushel	9@10c.
" coke, "	2 50	Anth'cite on cars Lehigh	$7 75
Connellsville coal, "	2 50	" " Wilkes-	
" coke	$2 25@2 75	Barre	6 75
Pittsburgh coal	1 85		

Twenty-five to fifty cents per ton additional for delivery.

COAL.—The coal trade, like almost every other branch of business, is reported dull and unsatisfactory, with but little prospect of an early improvement. The Cincinnati and Louisville as well as the leading Southern markets are overstocked, hence prices are low; but if navigation should continue suspended for another 30 days, and the prospects at this writing are very favorable, holders would probably be enabled to secure better rates. Orders from interior points in the West and Northwest accessible by rail are not very abundant, and prices are nominally unchanged; lump coal is quoted at 5¾c.@6c., delivered free on cars at works, and nut coal at 4¾c.@5c. A good buyer for a round lot might be able to discount these rates.

COKE.—There is nothing particularly new or important to record in connection with this branch of business. Trade remains in substantially the same condition as noted in our last report. Taking into consideration the fact that so many pig iron furnaces are out of blast, trade is all that can reasonably be expected, and with light stocks and the production very much curtailed, prices are maintained. We continue to quote at $2.65@$2.75 per ton, delivered free on cars in Pittsburg. Any decided improvement in the demand would be almost certain to cause an advance in prices in view of the very limited stocks, both in first and second hands.—*American Manufacturer.*

Richmond, Va. Sept. 6, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous,	$4 50
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River Bitum	3 30
Lewiston "	4 90	" " Carbonite,	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald*, Aug. 26, 1875.

Imports from January 1st to Aug. 16:

Anthracite tons	7,312	English, tons	27,637
Australian, tons	70,056	Vancouver Island, tons	37,772
Coos Bay, tons	23,112	Rocky Mountain, tons	42
Cumberland, tons	6,703	Seattle, tons	34,072
Mt. Diablo, tons (7 mos)	87,318	Bellingham Bay, tons	6,670

The receipts of Bituminous from all quarters continue excessive, causing a continuance of low prices. We cannot quote large cargoes of Steam, be they from Sydney or England, better than $8 50 per ton, at which sales of spot cargoes have recently been made, although the asking price is $9, or even more for choice parcels. We note the following arrivals since our last week's report: Per *Salvador*, 660 tons Wellington; *Windward*, 1,120 tons Seattle; *Elizabeth*, 1,600 tons, and *El Dorado*, 1,280 tons Ardrossan; *Garelock*, 1,810 tons New South Wales; and *New York*, 2,780 tons Liverpool. To these must be added regular supplies from Coos Bay, Bellingham Bay, Nanaimo, and from our own Mt. Diablo mines. Anthracite continues scarce and high. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively. Cumberland, $16@18; Nanaimo, $9 50@10; Seattle, $9 25@10; Anthracite, $15@$25; Lehigh jobbing at $28@$30. The ship *United States*, from Liverpool, brings 1,703 tons.

Toledo, Ohio. Sept. 6, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
Briar Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 75	Stove, screened	$8 25
Egg, "	7 75	Chestnut "	7 75
Lehigh Lump	9 50		

40 cents to $1 per ton additional for delivery at retail.

Halifax, N. S. Sept. 6, 1875.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	3 75
Victoria	3 50	Albion (at Railroad)	4 00

Montreal. Sept. 6, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.
Wholesale per ton of 2240 lb.

Scotch Steam	$5 50	Cape Breton Steam	$4 50
Pictou "	5 00	Newcastle Smiths,	7 00

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 00
Stove	7 75		

Toronto, Ont. Sept. 6, 1875.

The following are present retail prices for coal:

Per ton all sizes.

Lackawanna and Scranton	$7 00
Lehigh Lump and prepared	8 00
Blossburgh	6 50
Soft lump for grates	6 00
Soft nut	4 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 58	2 44	2 82	2 89	3 14
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	70
‡ Philipsburg, N. J.	98	84	1 35	1 31	1 65
Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 22	2 08	2 82	2 55	2 78
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Somerville and Raritan, N. J.	2 80	2 35	3 20	2 35	3 12
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 62	2 44	3 35	2 91	3 14
¶ Jersey City, N. J., and New York, via L. V. RR. and Morris Canal.	2 85	2 37	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR.	3 30	3 10	3 70	3 69	3 99
Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76
From *Mauch Chunk* to *New York* (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal					$2 37
From *Mauch Chunk* to *Philadelphia* via L. V. RR. and North Penn. RR					1 75
††From *Phillipsburg, N. J.* to *Hoboken* for shipment via Delaware. Lackawanna and Western RR., Morris and Essex Division					1 24
From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R.R. in connection with Pa. and N. Y. R.R.					2 59
From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte*					2 41
From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.*					2 58
‖ To this point for all places between Rochester and Buffalo the rate is					2 59
* The rate to this point for Syracuse is					2 22

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re-shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

Rules and Regulations for Coal Shippers over the Delaware, Lackawanna and Western R. R.

FIRST.—All claims for lost coal must be made by the Shipper. This Company will in no case settle claims with the consignee.

SECOND.—All claims for lost lump coal, for which the Company may be reponsible, will be paid for at the same rate per ton as this Company and the iron furnaces in the Lehigh Valley pay for coal for their own use. The allowance for chestnut will be twenty-five cents per ton less, and for stove and egg size, twenty-five cents per ton more than the lump.

THIRD.—Coal will not be paid for if lost from being loaded in broken or defective cars, or in cars with the doors not shut close.

FOURTH.—Consignments less than five 4-wheel cars will be charged twenty-five cents per ton additional upon the following rates.

FIFTH.—Fifteen cents per ton will be charged, in addition to the above rates, for unloading coal not unloaded by the consignee within twenty-four hours after its arrival, except coal unloaded at Newark in the pockets or bins of the Company, where ten cents per ton will be charged on all coal to defray the expense of unloading, and twenty-five cents per ton per day demurrage will be charged if not removed within twenty-four hours.

SIXTH.—At Hoboken an additional charge of fifteen cents per ton from cars, and twenty-five cents from stock for shipping expenses, and ten cents per ton for wharfage will be made. Coal delivered in bin for consumption at Hoboken will be charged ten cents per ton additional to consumption rates.

Freights.

Per ton of 2240 lb.

Representing the latest actual charters up to Sept. 9, 1875.

PORTS.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 00	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†1 60	1 90	1 25
Bath, Me	1 60	1 65	1 30
Baltimore	....	....	....
Boston, Mass	§1 50	1 60@1 65	1 25
Bridgeport, Ct	*85	1 45	80
Bristol, R. I.	....	....	90
Cambridgeport, Mass	§1 60	....	1 25
Derby	....	1 60	....
Dighton	....	1 65	¶1 25
East Cambridge	1 60&3c.	....	....
Fall River	1 35	1 45	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	1 70	2 00	1 25
Hoboken	†85	1 30	40
Hudson	1 00	1 60	....
Jersey City	....	1 30	40
Lynn, Mass	†1 60	....	†1 25
Middletown	....	....	1 00
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 35	1 50	90
Newburyport	1 65	1 75	1 35
New Haven	*85	1 45	90
New London	1 35	1 45	85
Newport	1 35	1 45@1 50	90
New York	85†	‖1 40	40
Norfolk, Va	85	75	....
Norwalk	1 35‡	1 65	90
Norwich	1 35‡	1 65	90
Pawtucket	1 45‡	1 75	‡100
Philadelphia	....	80@1 00	....
Portland	1 25†	1 65	1 20
Portsmouth, N. H.	1 60	1 75	1 40
Providence	1 35	1 45	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y.	*85	1 50	....
Richmond, Va	90	70	....
Rockport	....	....	....
Saco	2 00	....	....
Sag Harbor	....	....	1 00
Salem, Mass	1 60	1 65	1 25
Salisbury Pt., Mass	....	....	1 50
Savannah, Ga	....	1 50	....
Stamford	*85	....	85
Stonington	....	....	....
Taunton	..	..	1 30
Trenton, N. J.	....	....	....
Troy	*85	....	....
Warren, R. I.	....	....	90
Washington, D. C.	80	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C.	....	1 50	....

* And discharging and towing. † And discharging.
‡ And towing. § 3c. per bridge extra.
‖ The rate to this point by barge is $1 60. ¶ To wharf.

The Geneva, Ithaca and Athens Railroad Company.

Coal Tariff takes effect September 1st, 1875.

Rates from *State Line*. on a consignment of coal of not less than 25 tons of 2240 lb. will be as follows:

To *Ithaca* (local), 75c.; to *Geneva* (local), $1 50; to *Geneva* or *Cayuga* for *Buffalo* and *Tonawanda*, 95c.; *Geneva* or *Cayuga* for *Rochester* and *Charlotte*, $1 18; *Geneva* or *Cayuga* for *Phelps Junction*, for S P. S. and L. O S. R. R.'s, 92c. ; *Geneva* or *Cayuga* for all other points on N. Y. C. R. R., $1 18

Rate from *Lackawanna Junction* to *State Line* on coal for all points on the G. I. & A. (excepting *Geneva*), and C. L. R. R's., $2; *Ithaca* (shipment), $1 41; for *Geneva*, $1 41. For all other points on the N. Y. C. & H. R. R. R., $1 41.

Rate from *State Line* to *Van Ettenville* for all points on the Horseheads Division of the U. L. & E. R. R., 34c. Rate from *Van Ettenville* to any *point* on said Division, 33c.

Rate from *State Line to Ithaca*, for *Buffalo, Rochester, Syracuse*, and all other points via Erie Canal, 5c.

Rate L. & B. *Junction* to f. o. b. boats at *Ithaca* for *Buffalo*, or other Canal points, $2 06 per gross ton.

Rate L & B. *Junction* to *Buffalo, Black Rock, Susp. Bridge*, (via *Geneva*), all rail $3 97 per gross ton.

Rate L. & B. *Junction* to *Rochester*, all rail $3 44 per gross ton.

Canal freights, *Ithaca* to *Buffalo*, $1 10 net ton; to Rochester, 75c. (subject to change).

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st.			74c.
" Greenwich	"	Bituminous	64c.
" "	"	Anthracite	69c.
" Lambertville	"	Anthracite	62c.
" Port Richmond	"		68c.
" "	"	Semi-bituminous coal,	63c.
" Philadelphia	"	Cumberland "	58c.
" Trenton	"	Anthracite "	37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal ..... 35c.
Bituminous and Semi-bituminous Coal...35c.

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to	New York		$1 80
" " "	Portland, Me		2 00
" " "	Montreal, Canada		2 35
" " "	Quebec, "		1 80
" " "	Halifax, N. S.		1 25

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons, 10 to $17 inward and $6 to

$12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1¼c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c per ton. Two hatch vessels 7c. per ton.

Towing.

From foot of 23d Street, East River, and *return, per ton.*

	cts.		cts.
Bridgeport, Conn.....	33⅓	New Haven and Norwalk, Conn.....	33½
Hartford and Stonington, Conn.....	75	New London, Conn.....	60
Norwich, Conn	68	*Derby, "	33⅓
Stamford, Conn., per boat $75		Harlem, N. Y., per boat..$18	
Whitestone, L. I.....$30		Glen Cove, L. I.....	50

	cts.
Manhattanville, via Hudson River, per ton.....	8
Harverstraw and Peekskill, via Hudson River.....	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat.$75	
Sing Sing and Peekskill " " " "	20

* $50 per boat extra is charged for towage to this point.

Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BRITISH COAL AND IRON TRADES

LONDON, Aug. 28, 1875.

THE IRON TRADE.

There is, in a few sections, a better feeling, and in the North-of-England the price of pig iron has advanced a little; but a close examination indicates that the improvement is only temporary, and that a reaction has not set in. The cause of the advance in the North-of-England was the advantage taken by the makers of the arrival of a large number of vessels, to make shippers pay an advance on iron, rather than pay demurrages on vessels. The finished-iron trade continues very dull, and prices are weak. In South Wales there is a little more business doing, but there is so much room for improvement in that district, that the general business is but slightly benefited.

The following are the leading quotations of iron :

——	Tees, f.o.b.	Barrow, f.o.b.	Liverpool, on trucks.
No. 1 Pig.....	56/	*80/	70/6
No. 2 "	53/	*77/6	
No. 3 "	51/	*75/	68/
No. 4 Forge.....	47/	75/	65/
Common Bars..	150/		....
Rails	140/@145/		142/6@147/6

* Bessemer Pig.

Common bars in South Staffordshire, £7 10/, and marked bars £10 12/6 extra for Lord Dudley's. Rails in Wales £6 15/, and bars £7 10/@8.

THE COAL TRADE.

Upon the whole the trade remains quiet. The improvements in certain descriptions are counteracted by the reverse in others. The South Wales trade continues very good although it is restricted by lack of shipping. The shipments from Hull, Grimsby, and Goole were larger last week than during the week previous, and in excess of the corresponding weeks of 1873 and 1874. Tyne coals are quoted f.o.b. as follows: Steam, 12/@15/9d.; coking, 9/@12/; smith's, 8/@13/; hard steam nuts, 9/@12/; and coke, 15/@20/. Tyne Main, and Ushaw Moor Gas coals are quoted at 10/ f.o.b. Newcastle, and Hetton gas coal at 10/6d, f.o.b. Sunderland. Common steam coal at Liverpool 10/. South Wales coals f.o.b Cardiff as follows: Best double screened steam coal, 12/9d.; colliery screened, 11/3d @ 12/; and best patent fuel 14/6d.

THE LABOR MARKET.

A large number of the finished-iron workers in the South Staffordshire district have suspended work, awaiting the determination by the Conciliation Board of the conditions upon which they should have resumed work on Monday.

On Monday night, the bogie boys at the Britannia Ironworks, Middlesborough, struck for an advance of 5 per cent., and the rail bank men struck for an advance of 9d.@1/ per day. In consequence, the works were stopped, and about 1200 men thrown out of employment. On the following day the boys agreed to resume work at the wages they had been receiving, and on Wednesday the works were in full operation.

A reduction of 5 per cent. has been made at several of the ironworks in the Barrow-in-Furness district.

At a meeting of delegates, representing fourteen of the North Wales collieries, held at Wrexham, on the 19th inst., it was decided by a large majority to refer their present labor dispute to arbitration. Messrs. McDONALD and RICKARD, with five others, were elected to represent the miners on the Board.

At a meeting of members of the Amalgamated Association of Miners, at Shrewsbury, on Tuesday, Mr. HALLIDAY, the Chairman, urged upon those present the necessity of joining the new National Union, and said that he believed the time would come when the masters would form a federation to crush all classes of labor throughout the country; and that workingmen should, therefore, unite to prevent such a catastrophe, and to place themselves in a position to combat it. One of the main objects of the new Union is to procure the settlement of all disputes by arbitration, if possible.

SCOTLAND.

THE IRON TRADE.

The warrant market has been quiet during the week under review. Prices are about 2/ higher than a week ago. The market closed yesterday at 64/3d. @ 64/6d. The stocks in CONNAL & Co.'s stores continue to increase, the increase during the week having been about 2,500 tons. The total stock in store, yesterday, was 48,801 tons, as compared with 20,592 tons a year ago. The number of stacks in blast are 114, as against 110 a year ago. The shipments for the week show a gain of 4,938 tons, or about 50 per cent over the corresponding period of 1874. The total increase in shipments, in 1875, is 88,223 tons. The imports of Middlesborough pig iron show a gain of 340 tons for the week, as compared with the corresponding period of 1874, and for the year, of 16,825 tons. The manufactured iron and shipbuilding trades are very dull. The following are the quotations of some of the principal makers for No. 1 iron—Gartsherrie, 70/; Coltness, 73/; Summerlee, 66/; Langloan, 72/; Glengarnock, 67/6d.; and Eglinton, 63/6d. Freights to New York, 5/; to Boston, 14/; to Philadelphia, 12/; and to Baltimore, 12/@15/.

THE COAL TRADE.

Household coals are in greater request, and shipping coals are quieter. The foreign shipments during the week amounted to about 13,000 tons. The Glasgow quotations are as follows—Household coals, 8/ @ 10/3d.; steam, 8/9d@10/; smithy, 14/; splint, 8/@8/9d.; and Wishaw Main coal. 7/3d.@8/; Shotts Boghead gas coal, f.o.b. Bo'ness, 67/6d.; Lesmahagow, f.o.b. Glasgow, 33/; and Cleugh, etc., 28/.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Sept. 10, 1875.

American Pig.—Dealers say that trade is duller than it has been at any time since the panic. The business doing is only in a very small way, not enough to bring out prices at which iron could be bought. The condition of trade is such that a very marked reduction in prices would not bring out many orders, so that the furnace companies find it to be the best policy to give regular quotations, hoping that important buyers will make them offers for consideration. It is said that the proposition of the Reading Company is to be accepted by as many as nine of the stacks in Schuylkill County. One of our Philadelphia correspondents writes us that, owing to the financial condition of certain of the companies, a total of 19 stacks will be compelled sooner or later to accept the agreement. The Reading Company is a creditor of the Peekskill Iron Company, and it is reported that they are negotiating to run the latter's furnace. We quote No. 1 Foundry at $25 50@$26 : No. 2, $23@$24; and forge at $20 @$22.

Scotch Pig.—We note a sale of 100 tons Carnbroe, said to be at $29, and sundry small lots at regular quotations. The recent advance on the other side and the high price of gold practically take Scotch iron out of the market. Several hundred tons of late arrivals have been placed in bonded warehouse. We notice further arrivals on consignment, which will, most probably, net losses. If these shipments are evidences of the good foreign demand reported among speculators in Glasgow, we shall expect to see an end to it at some early day, when a decline will most probably set in, and holders will have to stand losses both on the iron they hold, and that which they have consigned to all quarters of the globe. We quote Eglinton at $29@$30; Coltness, $32.50; and Gartsherrie, $32.

Rails.—There are numerous inquiries in the market, and it is thought that some contracts will be consummated soon. We continue to quote at $47@$50, at mills, for iron, and $75 for steel.

Old Rails.—We note a sale of 200 tons, on private terms, and continue to quote at $26.

Scrap.—We learn of no transactions, and quote at $32.50@$35.

Philadelphia, Pa.

Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE COX, JR., & Co., Iron Merchants, 333 Walnut street, Philadelphia. Week ending September 9th 1875.

American Pig.—The general stagnation so long pervading the iron market has brought about a weak feeling on almost all brands.

The strong companies have at last succumbed, although they fought manfully until they found their trade gradually being absorbed by the weak ones, whose only salvation is to sell at the best price they can get. No. 1 is still held at $26, but offers of a dollar less in some cases will buy, while some hold firm to $26; No. 2 sells in small lots at from $23 to $24.

Mill Iron.—The general policy of the mills is to bid very low prices, or confine their purchases to small lots, thus hoping to bring mill irons down to a price that will give them a profit on their manufactured iron. In one case we hear of a prominent brand of mill iron being reduced from $25 to $23, at the furnace, and even this reduction does not bring them larger orders. We quote at from $22 to $25.

Bar Iron.—There is only a moderate demand for Bars, at such prices that mill-owners say leave them no profit. We quote at from 2.4@2.6.

Rails.—The demand for new Rails keeps up in a small way. We quote from $47 to $50.

Scrap.—The demand is slack and little offering. We quote at from $28 to $30.

Baltimore. Sept 9, 1875.

Specially reported by Messrs. R. C. HOFFMAN & Co.

There has been little change to note in the iron market since our last report. There is somewhat more inquiry for good brands of charcoal irons, but prices are not changed. Anthracite irons are dull and depressed, with but small transactions. We quote :

Baltimore Charcoal....	$31@35	Anthracite No. 3.....	$22@24
Virginia Charcoal.....	29@34	Mottled and White....	20@21
Anthracite No. 1.....	26@27	Charcoal C. B Blooms,	70@75
" No. 2.....	24@25	Refined Blooms.....	60@65

Boston. Sept. 8, 1875.

Specially reported by Messrs. E. P. CUTLER & Co.

We have nothing new to report as to the condition of this market, except a small local demand. Prices from store for standard irons are lower. Ordinary and low grades rule in buyers' favor, as there are lots on the market that holders are anxious to close.

We quote best No. 1 Anthracite, 28 to 30 dollars; 2 X, 2 to 3 dollars per ton less, from dock and store. Charcoal pigs are not wanted just now, and we think holders are not disposed to press sales.

IRON—There has been a little more desire on the part of consumers to buy American Pig, as it is believed that prices are at the lowest point, and dealers are looking for an improved trade from this time forward. The sales have been at $26@30 per ton, including No. 2 and 1 brands. In Scotch Pig there is nothing doing worthy of special notice, and prices continue nominal. There is very little improvement to notice in the demand for Bar Iron. Refined has settled down to $57@58 per ton, but buyers continue to operate sparingly. We quote common bar at $52@53 per ton, but very little selling. Rails are not moving to any extent, and prices are nominal. Sheet iron is moving slowly at unchanged prices.

Imports of pig iron from Jan. 1 to Sept. 4.

	1874.	1875.
From Great Britain, tons.	2,475	1,400
Coastwise	7,839	9,237

LEAD—The market for pig remains quiet, with no transactions except the usual small lots to consumers, and prices are unchanged. The demand for sheet and pipe has improved a little, but trade is light for the season, and prices remain at 9¼c. per lb. Tin-lined pipe is steady at 16½c., and block tin pipe at 45c. per lb.

Imports from Jan. 1 to Sept. 4.

	1874.	1875.
Pigs	69,429	22.054

TIN PLATES—The demand from the trade continues moderate. We quote currency rates as follows:—Charcoal IC at $9@9 25; coke at $7 50@8; and terne, including all kinds, at $7 50@10 per box.

COPPER—Manufactures are held at steady prices. We continue to quote copper sheathing at 30c., bolts and braziers at 31c.; and yellow metal sheathing at 22c. per lb.—*Shipping List.*

Chicago. Sept. 7, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

No. 1 Coltness.....	$41 00@ ....
No. 1 Gartsherrie.....	40 00@ ....
No. 1 Summerlee	39 00@ ....
No. 1 Glengarnock.....	38 00@ ....
No. 1 Eglinton.....	37 00@ ....
Warner's "American Scotch"	34 00@ ....
Massilon No. 1 Foundry	33 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	30 00@ ....
No. 2, " " "	28 00@ ....
No. 1 Mill.....	26 00@ ....
Union "A" 1 (Anthracite).....	28 00@ ....
Union "B" 1 (Anthracite).....	27 00@ ....
No. 1 Lake Superior (charcoal).....	30 00@ ....
No. 2 Lake Superior "	29 00@ ....
No. 3 Lake Superior "	30 00@ ....
No. 4 Lake Superior "	32 00@ ....
Bessemer Steel Rails.....	73 00@ ....
New Iron Rails.....	50 00@ ....
Old Rails	28 00@ ....

Cincinnati. Sept. 7, 1875.

Below please find closing quotations of our pig iron market, viz:

Specially reported by Messrs. TRABER & AUBERT, commission merchants for the sale of pig iron, blooms, ore, etc.

CHARCOAL.			
Hanging Rock, No. 1 Foundry.....	$26 00@27 00	—4 mos	
" No 2, "	24 00@25 00	—4 mos	
" Mill	24 00@	—4 mos	
Tennessee No. 1, Foundry.....	25 00@26 00	—4 mos	
Tennessee, No. 2, "	24 00@	—4 mos	
" Mill.....	24 00@25 00	—4 mos	
Missouri, No. 1, Foundry.....	.... @	—4 mos	
STONE COAL.			
Ohio, No. 1, Foundry.....	23 00@24 00	—4 mos	
" No. 2, "	22 00@23 00	—4 mos	
Ohio Mill.....	22 00@23 00	—4 mos	
Missouri, No. 1 Foundry	27 00@28 00	—4 mos	
" No. 2, "	26 00@27 00	—4 mos	
" Mill.....	26 00@27 00	—4 mos	
CAR-WHEELS.			
Hanging Rock, C. B	40 00@50 00	—4 mos	
Tennessee "	30 00@35 00	—4 mos	
Missouri "	35 00@40 00	—4 mos	
Alabama "	30 00@35 00	—4 mos	
BLOOMS.			
Charcoal	70 00@ 80 00	—cash	
SCRAP IRON.			
Cast.....	60c.@ 90	—cash	
Wrought	1 00@1 40	—cash	

Cleveland, Ohio, Sept. 6, 1875.

Messrs. C. E. BINGHAM & Co., quote as follows :

Per gross ton, on four month's time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.			
No. 1, Lake Superior Charcoal	31 50@....		
No. 2, " "	30 50@....		
No. 1. Anthracite.....	29 00@....		
No 2, "	27 00@....		
No. 1, Bituminous foundry.....	28 50@....		
No. 2, " "	27 00@....		
American Scotch, No. 1, Cherry Valley.....	31 00@....		
" " B—1, " "	28 50@....		
" " No. 2, " "	27 50@....		

No. 1, Massilon			30 50@....
B—1, "			27 50@....
No. 2, "			25 50@....
CAR WHEEL AND MALLEABLE IRON.			
No. 3 Lake Superior Charcoal			30 50@....
No. 4 " " "			32 50@....
Nos. 5 and 6 " "			33 00@....
BESSEMER IRON.			
Nos. 1 and 2 Lake Superior Charcoal			31 00@....
FORGE IRON.			
No. 1, Gray			24 75@....
White and Mottled			23 50@....

Indianapolis, Ind. Sept 6, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill			$48 00@50 00
Old Rails "			24 00@26 00
Hanging Rock Charcoal Pig No. 1 foundry			28 00@29 00—4 mos
" " " " " 2 "			26 00@28 00—4 mos
" " " " Mill			24 00@26 00—4 mos
Car Wheel C. B			40 00, nominal.
STONE COAL.			
Indiana No. 1 Foundry pig Red Short			24 00@26 00—4 mos
" 2 " " "			22 00@24 00—4 mos
" 1 Forge " "			....@ ....—4 mos
" 2 " " "			. ..@ ....—4 mos
Ohio No. 1 Foundry pig Cold Short			25 00@26 00—4 mos
" 2 "			24 00@25 00—4 mos
" Mill			23 00@24 00—4 mos
" No. 1 Foundry, Neutral			26 00@28 00—4 mos
" No. 2 " "			25 00@27 00—4 mos
Merchant Bar			2½c.—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb			5 c.—3 mos
1st " Com. Sheet for No. 24, W.G. "			4 c.—3 mos
1st " Charcoal Sheet " " "			5½c.—3 mos
Best Bloom Galvanized Sheet, discount			20 per cent.—cash.
2d quality " " "			30 " ....—cash.

f. o. b. in Indianapolis.

Louisville. Sept. 6, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

Foundry Irons are again dull, with little demand. The mills are generally running and there is some demand for their grade. The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.	
No. 1 foundry, from Hanging Rock Ores	$26 00@27 00
No. 2 " " "	24 00@25 00
No. 1, Mill, from " "	22 00@23 00
No. 1, foundry, from Alabama, Georgia and Tennessee ores	24 00@25 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	23 00@24 00
No. 1, Mill, from " " " "	22 00@23 00
HOT BLAST—STONE COAL AND COKE.	
No. 1, foundry, from Hanging Rock ores	24 00@25 00
No. 2, " " " "	23 00@24 00
No. 1, Mill, " " " "	22 00@23 00
No. 1, foundry, from Ala. Ga. and Tenn. ores	24 00@25 00
No. 2, " " " "	23 00@24 00
No. 1, Mill, " " " "	22 00@23 00
No. 1 foundry, from Missouri ores	24 00@25 00
No. 2 foundry, from Missouri ores	24 00@25 00
Fo. 1 Mill, from Missouri ores	26 00@27 00
COLD BLAST—CHARCOAL.	
Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	28 00@30 00
" " Alabama and Georgia ores	28 00@30 00
" " Kentucky ores	28 00@40 00

Pittsburgh. Sept. 8, 1875.

PIG IRON.—While business during the past week has not been active by any means, it was about all that could reasonably be expected, notwithstanding the expectations of some of our most sanguine operators have not been realized, either as regards demand or prices. It was expected by some of the more hopeful, a few weeks ago, that ere this there would have been a decided increase in the volume of business; that some of the mills intended to contract for a two or three months' supply, and that an improvement in prices would be the result; but up to this writing, as already stated, neither expectations has been realized. The demand is still confined almost entirely to supplying immediate necessities, manufacturers appear to have resolved to carry no more stock than is absolutely necessary, and while there has been no quotable change in prices, the general tone of the market is not apparently as strong as it was a few weeks ago. This may be attributed in part to the recent financial troubles, which have had a tendency to depress the general business interests of the country; there is reason to believe that, if it had not been for the failures to which reference has been made, some of the mills would ere this have bought considerable pig iron, as the feeling prevailed, in view of the very limited supply and light production, that it was good property, and was more likely to go higher than decline. The future of the market is very unsettled, but the indications generally at the present writing warrant the prediction that the hand-to-mouth policy will be pretty generally adhered to during the next thirty, perhaps sixty, days, and if so, it is not likely there will be much, if any, change in the meantime. Advices from the furnaces in the Shenango and Mahoning valleys report that considerable iron is still being sold there to go to Cleveland, Detroit, Chicago, and other parts in the West, and at fully as good, if not better, rates than those current here, but the fact that Pittsburgh is buying sparingly is not without an effect, as she requires almost, if not altogether, as much pig iron as all these western points combined.

QUOTATIONS.

No 1. foundry	$27 00@28 00—4 mos
" 2. "	25 00@26 00—4 mos
Gray forge	24 00@25 00—4 mos
White and mottled	22 00@23 00—4 mos
Hot blast charcoal	29 00@32 00—4 mos
Cold blast charcoal	35 00@40 00—4 mos

MANUFACTURED IRON.—The general situation of the market for manufactured iron remains substantially as noted in our last review. While there is no question that the recent financial troubles dimmed the outlook somewhat, and that trade has been thrown back in consequence, yet we think the effects of this little panic, as it were, will soon pass away, and that confidence, which was disturbed, will again soon be restored. It is comfortable to know that the farmers are in good shape, having had good crops for several years in succession, and furthermore realized remunerative rates therefor, and as stocks are very much reduced, both in the hands of jobbers and consumers, there is reason to believe there will be an increased consumption, and we look for an increased demand. However, the trouble with our manufacturers is not so much a scarcity of orders as it is remunerative rates; we doubt whether the production in Pittsburgh was ever any larger than it has been since the lock-out, as every mill, with the exception of the Superior Rail Mill, was in operation, many of them working double turn; but, since the taking of stock, it has been ascertained that there was but little money made, although it was not unexpected. At the last meeting of the Association it was agreed not to accept orders under a basis of 2.40c., 60 days, for bars, at which there would be, if we mistake not, a small margin for profit; but it is feared this agreement will not be adhered to, as competition is strong, and it is difficult to keep up rates in consequence. There is to be another meeting of the Association to-morrow, when the subject of adopting a new card will be considered and possibly a new list adopted, as the committee appointed for this purpose at a former meeting will doubtless have one ready. The main object of a new card is to so arrange it as to prevent, if possible, so much cutting on the ordinary sizes. There is considerable inquiry for some kinds of iron, including that required in making agricultural implements, and makers generally are not so anxious for orders, as the feeling prevails that prices are not likely to go any lower, but, on the contrary, are more likely to advance than decline.

PIG METAL SALES REPORTED FOR THE WEEK ENDING SEPT. 3, 1875.

BITUMINOUS COAL OR COKE SMELTED FROM LAKE SUPERIOR ORE LAKE SUPERIOR AND NATIVE.	
270 tons No. 1 and 2 mixed	$23 50—4 mos.
600 tons gray forge	24 00—4 mos.
600 tons gray forge	24 00—5 mos.
130 tons white and mottled	22 50—4 mos.
120 tons white and mottled	22 00—4 mos.
ANTHRACITE.	
20 tons No. 1 foundry	$28 00—4 mos.
100 tons No. 1 foundry	26 00—4 mos.
30 tons No. 2 foundry	23 50—cash.
CHARCOAL.	
160 tons No. 2 foundry, H. R	$26@32—4 mos.
30 tons No. 2 foundry, H.R	26@50—4 mos.
30 tons No. 2 foundry, H.R	25@50—cash.
10 tons No. 1 foundry H R	25@00—cash.
100 tons No. 2 foundry, East	25@00—4 mos.

American Manufacturer.

Richmond, Va. Sept. 6, 1875.

Reported by ASA SNYDER, Esq.

First-class wheel irons continue very firm; they are daily growing more scarce. Outside lots of iron, not so well known, continue to be offered considerably below regular quotations. We quote:

Virginia Cold Blast Charcoal Pig Iron			$30 to $35
" Warm " " "			28 to 32
" " " Coke "	" 1 X		26 to 27
" " " " "	" 2 X		25 to 26
" " " " "	" 3		24 to 25
" Anthracite 1 X			27 to 29
" " 2 X			26 to 27

San Francisco, Cal.

From the *Commercial Herald*, Aug. 26, 1875.

The receipts of pig iron continue upon a liberal scale, causing prices to droop in the face of an increased consumption. The demand for tin plate is surprisingly small, and quotations are entirely nominal. The stock is thought to be large. The supply of Sydney pig tin is liberal, with a limited demand; prices, 22½c. Banca tin is held at 25c.@26c. The stock of yellow metal is not large, and when suits are required they are ordered from the East by rail. The market for American cast steel is well supplied, and is fast taking the place of best brands of English. The trades are carrying large stocks of manufactured iron—bar, sheet, bundle, etc.—prices of which remain the same as for a long time past. Selby's pig sheet and bar lead is in good stock and prices unchanged. Oregon pig iron is in scant supply. The last sales were at $42 50. We quote spot lots Scotch and English at $37@$42 50, in lots, according to brand and quantity. Invoices of same to arrive can be bought at $34@$35.

St. Louis. Sept. 6, 1875.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

BITUMINOUS.			
Missouri, No. 1	$27@28	Massillon A No. 1	$35@36
" " 2	$25@26	" B " 1	$33@34
" " 1 Mill	$24@25	" " 2	$32@33
CHARCOAL—HOT BLAST.			
Missouri, No. 1	$27@28	Tennessee, No. 1	$26@27
" " 2	$25@26	" " 2	$24@25
" Mill	$24@25	" Mill	$23@24
Hanging Rock, No. 1	$26@29	Georgia, No. 1	$28@—
" " " 2	$26@27	" " 2	$26@—
" " " 3	$25@26	" Mill	$24@—
CHARCOAL—COLD BLAST.			
Missouri Car Wheel	$33@35	Tennessee " "	$33@35
Alabama " "	$33@35	Hanging Rock "	$50@53
MISSOURI BLOOMS AND BILLETS.			
Charcoal Blooms	$75@85	Hammered Billets	$90@100
Scrap "	$70@75		

METALS.

NEW YORK, Friday Evening, Sept. 10, 1875.

The business doing in metals is entirely in a jobbing way, although it makes a fair aggregate. With the exceptions of tin, the various articles have shown a weakness in prices. The London market, according to latest cable information, remains about as quoted last week.

EARNEST W. S. MURRANT, ESQ., of London, under date of August 27, says: "Business generally throughout the Kingdom is still dull, and all trades participate more or less in the reaction caused by a period of excessive inflation. The recovery must be slow, and any attempt to suddenly enhance values will probably bring its own punishment."

Gold Coin.—During the week past gold has ranged from 114¼@117 and closed at 116¾.

Bullion. Fine silver bar is quoted at $1.22½@$1.23½, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce,) to ¼ per cent. premium. Silver shows a slight decline, while our quotation of gold is only nominal.

Copper. - The sales during the week have been light, not aggregating over 250,000 lb. at 23¼c.@23½c. There is but little copper offering, but the demand is only in proportion; 23¼c. is bid to-day, while 23⅜c. is asked. The London market was quoted yesterday, by cable, at £82 10/ for Chili bars. Best selected was quoted on the 4th inst. at £90.

Mr. MURRANT says: "At Swansea Ticketing of copper ore, on Tuesday last, 247 tons fine, with an average produce of 19½ per cent., fetched an average price of 16/6 per unit. In Chili there has been a rather quiet market, at about £82 10/ for cash, and £81 10/ to £82 for forward parcels. The demand for copper of all sorts has been limited; but it is hoped that trade may yet revive before the end of the year. The sales of Chili were reported as 400 tons g. o. bs., and best brands at £81 10/ to £83 for cash and prompt."

Tin.—This article is the most firm of any on the list. Straits is quoted at 19c. gold; L. & F. 18⅜c.@18½c.; Refined 18½c.@19c., and Banca 23c.@24c. gold. Stocks, here, are light, and held by strong hands. The business doing is only in a moderate jobbing way. The London market was quoted by cable to-day at £83 for Straits.

Of Tin, in England, Mr. MURRANT says: "In Straits active efforts have recently been made by interested parties to persuade present holders to increase their purchases, as well as to induce fresh speculation on the part of outsiders. During the earlier part of the week prices were run up, at least nominally, to 83/6 for cash, but receded the same day to 82/ for landing parcels. Continual queries are being received as to what cause the severe fluctuations in tin are due, and experienced operators say they cannot understand them; but what are the facts? Let us take the position of the article for the first seven months of the last three years for the United Kingdom:—

	1873. Tons.	1874. Tons.	1875. Tons.
Imports to 31st July	5,110	4,540	10,740
Exports to 31st July	3,790	6,430	5,510
	1,320	1,890	5,230
Stock in London on 1st Jan.	960	2,010	2,900
	2,280	120	8,130
Increase against	5,850	8,010	—
	8,130	8,130	8,130

"It will be thus seen that we have, according to official records, an excess of tin, in *public and private hands*, of about 5,800 tons as against that available in 1873; and about 8,000 tons against that in 1874. The immense sources of supply in Australia, almost unknown so late as about three years ago, but which are now admitted to be practically inexhaustible, must also be taken into consideration. The above facts and figures certainly point to the probability of our having, sooner or later, another more or less heavy drop to record. The week's business has been reported to be 340 tons Straits, and 160 tons Australian at 77/ to 83/6 for cash and arrival."

Tin Plates are in fair jobbing request and quoted as follows: I. C. charcoal $7.37½@7.62½ gold per box, and ternes $6.87½@7.25; coke tins $6.50, and ternes $6@6.25 gold, per box.

Of tin plates, Messrs. ROBERT CROOKS & Co., of Liverpool, under date of August 26, say: "Demand continues of a very retail nature, and makers have in many cases during the past week submitted to reductions upon previous low prices. With a capacity of production more than fully equal to the largest probable demand, there appears no chance for some time to come of anything other than low prices."

Lead.—The sales during the week do not aggregate over 200 tons at 5·85c.@5·90c. gold. 5·85c. is about the asking price to-day for ordinary quantities, while large lots could be bought at a concession; although holders, realizing the condition of the market, consider it folly to push sales. Foreign, with but little doing, is quoted at 7¼c. gold:

Spelter and Zinc.—We are reported sales, in lots aggregating about 40 tons, of domestic Spelter, at 7¼c.@7¼c. currency, which are the quotations to-day. Foreign,

with nothing doing, is quoted at 7⅛c.@7¼c. gold. Sheet Zinc is quoted at 8½c@9c. gold, according to size.

Antimony is quiet at 13c.@13¼c. gold; but very strong, owing to the light stock here, and the high price ruling in London.

Quicksilver shows a decline, the quotations being as follows: New York, 70c. per lb., and San Francisco, 65c. Our latest London advices, bearing date of August 27th, quote at £9@£9 5/ per flask of 75 lb.

The San Francisco *Commercial Herald* of August 26, says: The supply continues liberal and those parties who made contract sales for monthly delivery for a twelvemonth for New York account at 65c. find themselves in clover. The present rate is 65c. for invoice parcels; jobbing lots 67½c@70c. according to quantity. The steamer *Newbern*, hence August 21st., for Mexico, carried 190 flasks valued at $9,648. The receipts for the past week aggregate 1,048 flasks. Late advices from London report a still further decline, and this must soon have its legitimate effect here as it has already in New York. The tendency here is now largely in buyers' favor.

FINANCIAL.

New York Stocks.

FRIDAY, September 10, 1875.

Transactions in the New York Stock Market during the week under review have been devoid of special features. Quotations, with a few exceptional instances, remain almost the same as reported in our last. Prices, however, closed firm, with an upward tendency, a buoyant feeling pervading the market during the day.

Bonds are firm, with about the average volume of transactions.

At a meeting of the Directors of the Consolidated Coal Company, held September 7th, the following resolutions were unanimously adopted:

Resolved, That the regular days of paying dividends hereafter shall be on the 15th of September and March of each year.

Resolved, That in accordance with the above resolution a dividend of 2½ per cent. be declared on the capital stock, payable on and after the 15th inst., and that the transfer books be closed on Saturday, the 11th inst., at 2 o'clock P.M., and be reopened on the 16th inst.

H. C. HICKS, Secretary.

Under the influence of the above announcement this stock has advanced 2½ per cent., with sales of over one thousand shares for the week.

$15,000,000 Lehigh and Wilkes-Barre Consolidated Guaranteed Mortgage Bonds have been placed on the regular Stock Exchange list. These bonds are guaranteed by the Central Railroad Company of New Jersey; they mature June 1, 1900, and bear 7 per cent. annual interest, payable quarterly on 1st of March, June, September and December. These bonds are to be issued by the Lehigh and Wilkes-Barre Coal Company for the purpose of funding the company's indebtedness, and retiring or paying their present outstanding bonds.

At a recent auction sale in New York, 1,625 shares of the Southern Oil Works of Tennessee (par value $50) sold for 75c. per share.

We note recent sales of $7,000 Chesapeake and Ohio Canal Pref. bonds, at Baltimore, at from 115⅛ to 116; also 2 000 shares of the Atlantic Coal Company's stocks at from $2 25 to $2 65 per share.

Quotations and Sales of Stocks and Bonds,

For the week ending Sept. 10, 1875.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	275	22
Consolidation Coal Co	49½	48	49¼	1025
Spring Mt. Coal Co	—	—	63	—
American Coal Co	—	—	50	—
Maryland Coal Co	—	—	17	100
Cumberland Coal and Iron Co	—	—	116	—
Del., Lack., and West. RR. Co	121	120	121	1662
New Jersey Central RR. Co	111	110	111	491
Delaware and Hudson Canal Co	120¼	120	120¼	226
Quicksilver Mining Co. pref'd	21	20	21	200
" " " Common	15⅞	14½	15⅞	500
Mariposa Land & Min. Co. various	10	9	9	400
St. Louis & Iron Mountain RR	—	—	18	—
Lehigh & Wilkes-Barre Coal Co	—	—	—	—
Total Shares sold				4626
Sales for the week previous				4543
Increase				83

BONDS.

	Sales.	Price
Ches. & O. R. R. 6s, ex. cou	—	— @ 30
" " " coupon on	8,000	— @ 34
Central RR. of N. J. 1st Mtg. N	12,000	— @11[illegible]
" " " 1st Cons.	51,000	107¼@107¾
" " " Cons. Convt.	1,000	— @109¾
Del. and H. C., 1st Mtg. Reg. '84	3,000	— @110
Del. and Hudson Canal, 7s, '77	—	— @103
Del., Lack. & W. R. R., 7s, conv.	—	— @120
" " " " 2d Mtg.	2,000	— @109⅛
St. Louis & Iron Mount'n 1st Mtg.	2,000	90 @ 90⅞
St. Louis & Iron M'tn, 2d Mtg.	—	— @ 53½
Total Sales	$79,000	

Closing quotations in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, Sept. 10, 1875.

The Philadelphia stock market has been without any feature of special interest during the operations of the past week. Transactions exhibit a material falling off compared with those for the week previous, and quotations are nominally unchanged, the market closing dull. Transactions in bonds have been up to the average, with prices fully maintained. We note a sale of 73 shares of the Westmoreland Coal Co., at auction, at $85 per share.

Quotations and Sales of Stocks and Bonds,

For the week ending Sept. 10, 1875.

STOCKS.

	Highest	Lowest	Closing	Shr's
Huntingdon and B. T. RR.	—	—	7	—
" " " Pref'd.	—	—	10	—
Lehigh Valley RR. Co	62¾	62⅝	62⅝	233
Pennsylvania RR.	50½	50¼	50¼	22800
Reading RR.	57	56⅜	56⅜	4847
Lehigh Coal and Nav. Co	50¼	50⅛	50¼	4104
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co	—	—	—	—
Locust Mountain Coal Co.	—	—	—	—
Westmoreland Coal Co		—	85	—
Cambria Iron Co	—	—	—	—
Crane Iron Co	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co	—	—	74	24
Total shares sold				32,008
Sales for the week previous				64,962
Decrease				32,954

BONDS.

	Sales.	Price
H. and B. T. RR. 1st mortgage, 7s	—	— @106
" " " 2d " "	—	—@102½*
" " " 3d " cons	—	— @ 60*
Lehigh Valley RR. 6s, '98	—	— @103¼
" " " 7s, 1910	1,000	— @109
" " " con. mtge. 6s reg	2,000	— @ 99⅛
Pennsylvania RR., 1st mtge. 6s	—	— @103⅜
" gen. " reg. 1910	1,000	— @103¼
" " gen. " 6s	—	—@*101¼
Phil. & Reading RR. 6s,	—	— @101⅛
" deb. bonds	6,000	— @ 81⅛
" " " G. M. 7s, cou. 1911	8,000	— @107¼
" " " " reg. 1911	—	— @106¾
" " " 6s g. 1911	—	— @107
" " new convertible 7s, '93	15,500	108¾@109¼
Phil. & Reading C. & I. Co. 7s deb. '92	—	— @*81¾
" " " M. 7s, Helf. tract.	1,000	— @ 91⅛
Lehigh Coal & Nav. Co., 6s '84	4,800	101¾@102
" " " RR., '97	4,700	101 @101⅛
" " " '77	8,600	96 @ 96¼
" " " conv. '82	—	—@102
" " " g. '94	—	— @104
" " " gold, '97	18,000	@102¼102¾
Penn. and N. Y. Canal, 7s	6,000	— @107⅛
Susquehanna Coal Co. 7s	—	— @ 70
Total amount of sales	$76,600	

* Asked.

Closing quotations, in the absence of sales, represent the latest prices bid.

(BY CABLE.)

London.

FRIDAY, September 10, 1875.—3 P. M.

The London stock market remains steady, with a fair inquiry for American securities. Pennsylvania R. R shows a falling off of ¼ per cent. Reading R. R. shares are unchanged.

Bank of England rate remains unchanged.

Philadelphia and Reading R.R	51
Pennsylvania R.R	45
United States 5-20s new	105 3-16
Consols for money	94⅜

Gold and Silver Stocks.

SAN FRANCISCO, Sept. 9, 1875.

A buoyant and confident feeling prevails with regard to the rapidly improving condition of affairs on the Pacific coast. The Trustees of the Bank of California are now engaged in examining the affairs of that institution. It is authoritatively stated, as the inquiry proceeds, that the outlook continues to improve, the bank being in a better condition than was anticipated.

Our latest dispatches state that the Bank of California will open at the same time as the Bank of Nevada, on or about the 15th inst. The two principal Stock Boards will also open at the same time. Treasurer NEW has refused several fresh applications for coin.

We are in receipt of a few quotations of stocks, dated September 6, representing small sales made by members of the California Stock Board, which is opened for business. This Board is the smallest of the three in San Francisco, and contains no heavy operators; their transactions, therefore, can hardly be considered fairly indicative of the condition of the market.

The subjoined statement shows the condition of the Merchants' Exchange Bank of San Francisco at the time of its recent temporary suspension:

ASSETS.

Loans, discounts and bonds	$5,922,539 72
Furniture	3,689 35
Cash on hand	189,562 24
Cash in New York	93.529 15
Total assets	$6,209,320 46

LIABILITIES.

Capital	$5,000,000 00
Deposits	925,086 39
Dividends unpaid	8,608 00
Surplus	275,626 07
Total liabilities	6,209,320 46

The Consolidated Virginia Mining Company has declared its September dividend of $10 per share, payable on the 12th inst.

The Trustees of the New York Mining Company on Tuesday levied an assessment of 50 cents per share on the new stock, amounting to $50,000, delinquent October 4th.

QUOTATIONS:

	No. of shares.	Aug. 25.	Sept. 6.
Sierra Nevada	100,000	$15	
Union Consolidated	100,000	8	
Mexican	108,000	19	16¼
Ophir	108,000	55	47
California	540.000	57	51
Consolidated Virginia	108,000	265	240*
Best & Belcher	100,800	47	
Gould & Curry	108,000	17	
Savage	16,000	88	
Hale and Norcross	16,000	47	
Cholla Potosi	28,000	75	
Alpha Consolidated	30,000	18	
Imperial	100,000	21	8
Yellow Jacket	24,000	58	60
Kentuck	30,000	16	
Crown Point	100,000	26	23¼
Belcher	104,000	25	21
Overman	36,400	54	
Caledonia	20,000	18	
Raymond & Ely	30,000	33	
Meadow Valley	60,000	5	
Eureka Consolidated	50,000	27	
Eureka G. V.	20,900	7	

* Quotation Sept. 5th.

Copper Stocks.

We are without quotations from the Boston Stock market this week.

Gas Stocks.

NEW YORK, Sept. 10, 1875.

We are indebted to the courtesy of Messrs. W. B SCOTT & Co., Bankers and Dealers in Gas Stocks, No. 24 Pine street, New York, for much of the valuable information contained in the following tables:

COMPANY.	Cap. Stk.	Par.	Bid.	Askd.
Mutual Gas Light Co., N.Y. City	$5,000,000	$100	105	106¼
New York " " "	4,000,000	100	156	
Metropolitan " " "	2,500,000	100	155	
Manhattan " " "	4,000,000	50	295	298
Harlem " " "	1,850,000	50	133	
Westchester Co. " New York.	466,000	100	100	
Brooklyn " " Brooklyn	2,000,000	25	245	250
Citizen's " " "	1,200,000	20	150	
People's " " "	1,000,000	10	100	101
Nassau " " "	1,000,000	25	125	
Metropolitan " " "	1,000,000	100	103	104
Williamsburgh " "	1,000,000	50	142	
J. C. and Hob'n. G. L. Co. N.J.	386,000		160	
People's " " of J. C.			130	
Citizen's G. L. Co., Newark, N.J.				65
Hempstead " " L. I., N.Y.	40,000	100		100
Jamaica, " " "	25,000	100		100
Citizens', Rochester, "		100	50	65
People's G. L. Co. Albany, "	1,000,000	100	45	
Mutual " Buffalo "	750,000	100	50	
Troy G. L. Co., Troy, N. Y.			108	
Baltimore G. L. Co., Balt., Md.	2,000,000	100	190	200
People's G. L. Co., Balt., Md	2,000,000	25	26½	27½
Hannibal G. L. Co., Hanni., Mo.	100,000	100	90	
Lewiston G. L. Co., Lewis., Me	400,000	100		80
Chicago G. L. Co., Chicago, Ill.	2,000,000	100	145	150
Derby G. L. Co., Derby, Conn.	160,000	100		80
Woonskt G. L. Co. Woonskt, R.I.	150,000	100	100	
Fort Wayne G. L. Co. F. W., Ind		100	105	
North. Liberties G. L. Co. Phila.		25	29¼	
Portland G. L. Co. Portland, Me	350,000	50	72	75
Hartford G. L. Co., Hartford, Ct	700,000	25	41	43
Boston G. L. Co., Boston, Mass.	2,500,000		775	800
Chelsea G. L. Co. Chelsea, "	300,000		130	
Cambridge G. L. Co., Cam., "	700,000		132¾	
Louisville G. L. Co., Louis., Ky.			127	
Cincinnati G. L. Co, Cincin. O.			208	
S. F. G. L. Co. San Francisco, Cal			95	97
City G. L. Co. Montreal, Canada	1,440,000	40	128½	129½
Consumers G. L. (old.) Tor., Ont	600,000	50	131	
Halifax G. L. Co., Halifax, N.S.		40		148

American Mines in London.

DIVIDEND MINES.

CLOSING PRICES—Aug. 28, 4 P. M.

No. of Shares.	Mines.	Par Value of Shares.	Bid.	Total Dividends paid.	Last paid.
		£	£	£ s. d.	
10,000	Battle Mountain, c. (6240 sh.) part paid	5	....	0 10 0	Nov. 1872
15,000	Birdseye Creek, g. Cal.	4	1½	0 14 0	June, 1874
40,000	Cedar Creek, g. Cal.	5	⅝	0 5 0	June, 1873
15,000	Chicago, s. Utah	10	4	1 12 0	May 1875
21,000	ColoradoTerrible,s.-l.Col †	5	2½	0 13 6	Jan. 1875
23,500	Eberhardt&Aur'a, s. Nev.†	10	8	1 0 0	July, 1871
60,000	Emma, g. s. Utah (35,000 shares part paid	20	1¼	3 12 0	Dec. 1872
15,000	Ferguson, g. Cal	2	....	0 3 0	Ap'l, 1872
30,000	Flagstaff, s. Utah	10	1	4 2 0	July, 1873
30,000	Gold Run, hydr, Cal.	1	1/16	0 2 4	Oct., 1872
20,000	Last Chance, s. Utah	5	¾	0 14 0	July, 1873
65,000	London & California. g.†	2	1/16	0 1 0	July, 1875
15,000	Mammoth Cop.c. s. Utah	10	....	0 5 0	Dec., 1872
5,000	Mountain Chief, s. Utah.	10	....	0 4 0	Jan., 1873
125,000	Sierra Buttes, g. Cal.†	2	1	1 14 0	July, 1875
60,000	South Aurora, s. Nev.	5	8	0 14 2	Nov., 1873
15,000	Sweetland Creek, g. Cal. †	4	2¾	3 0 0	Dec , 1874
20,000	Tolima, g. s. (14,000 sh., £4/10 pd)	5	3	0 11 6	May, 1874

NON-DIVIDEND MINES.

		Paid.	Last price.	Last Call.
		£ s.	£	
30,000	Blue Tent, hydr. g. Cal.	5 0	5	Fully paid
12,000	Camp Floyd, s. Utah	10 0	....	" "
6,000	Clifton, s. Col.	5 0	....	Feb., 1872
10,000	Crescent, g. Cal	10 0	....	Fully paid
10,000	Douglas, s. Georgetown, Col.	5 0	....	" "
35,000	Excelsior, Hyd. Gld. Cal.	6 0	...	Dec., 1871
60,000	Exchequer, g. s. Cal	1 0	3/16	Fully paid
10,000	Goetzel Tunnel Co., Col.	7 0	....	" "
40,000	Holcombe Valley, g. Cal.	1 0	1	July, 1873
20,000	Independence, g. Cal.	5 0	2 3/16	Fully paid
20 000	I. X. L., g. s. Cal.	5 0	2 3/16	" "
15,000	New Pacific, g. s. Nev.	0 10	5/	Dec., 1874
32,500	Ruby Consolidated, s Nev.	10 0	....	Fully paid
15,000	Saturn, s. Utah	5 0	...	
10,000	Silver Plume, s. Col	1 0	..	Fully paid
37,500	Snow Drift, s. Col.	2 0	1 1/16	" "
30,000	Tecoma s. Utah	10 0	3/16	" "
14,000	Utah, g.. s -l. Utah	5 0	1/16	" "

c. copper ; g. gold ; s. silver; s.-l. silver-lead ; † quoted on the London Stock Exchange. All of the above are Limited Liability Companies.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

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II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The second volume of Transactions has been mailed to all home members and associates not in arrears. Any member who failed to receive his copy will please notify the Secretary promptly. The Institute is not responsible for the loss of the volume in those cases where members have changed their residences and have omitted to inform the Secretary. Volumes I. and II. will be sent, post-paid, to non-members, at five dollars each.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

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For each additional constituent	2 00
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12 50
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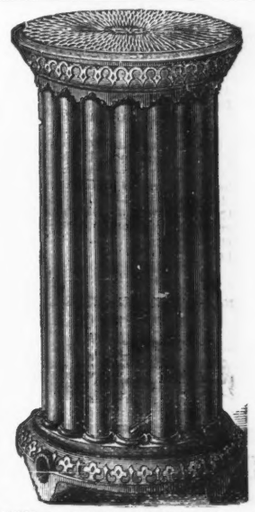

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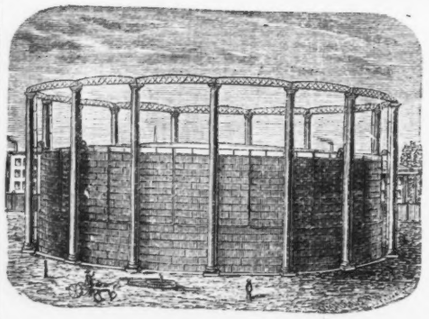

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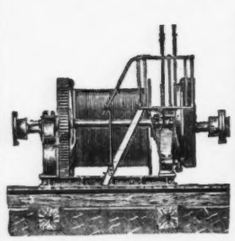

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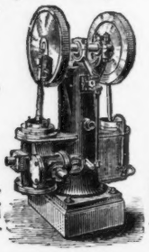

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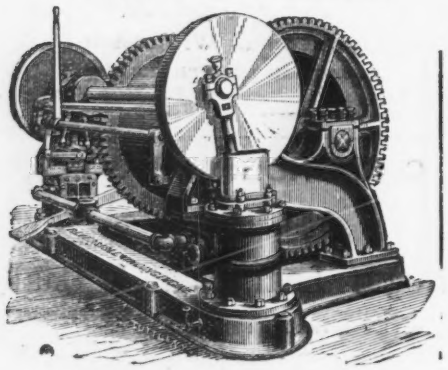

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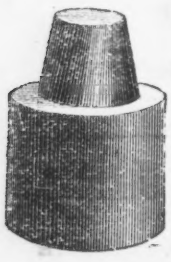

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I must add, however, that I do not consider any drill, yet used, perfect. To retain the preference we give you, it is important that you should not let your competitors outstrip you in efforts to simplify and otherwise improve the mechanism of drills. Truly yours, (Signed) J. B. BRINSMADE, Secretary and Treasurer.

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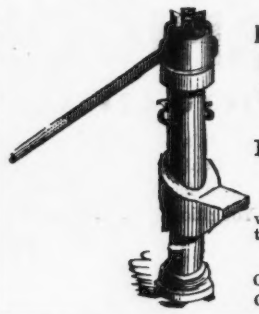

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Extract from the Hudson, N. Y., *Weekly Star*, June 10, 1875.

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